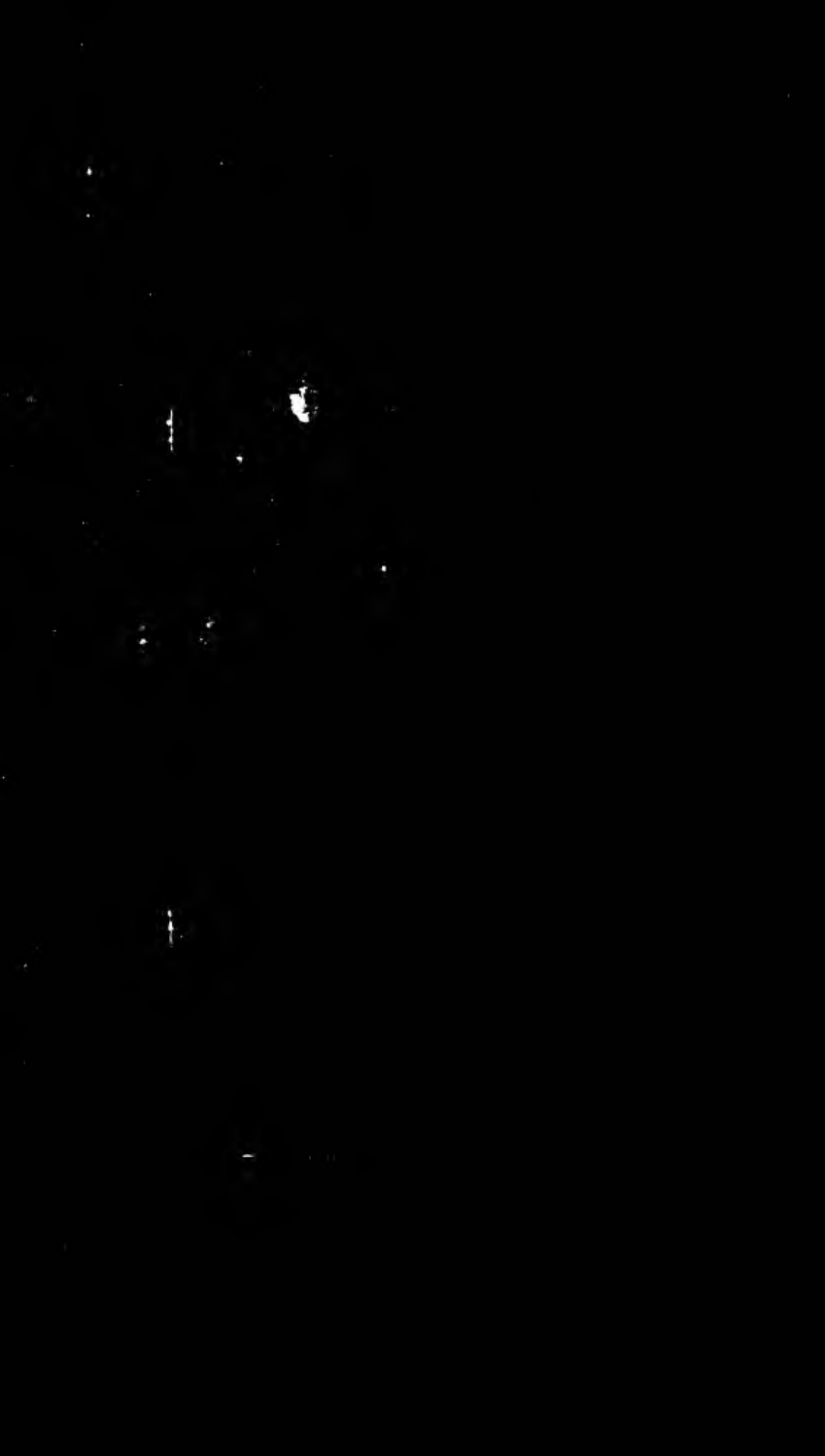


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17 Feb. 1905.

ABOUT DREAMING, LAUGHING
AND BLUSHING

ABOUT
DREAMING, LAUGHING
AND BLUSHING

BY

SIR ARTHUR MITCHELL, K.C.B.

EDINBURGH AND LONDON
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1905

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DEDICATED TO
DR. JOSEPH BELL
A TRUSTED FRIEND
OF MANY YEARS

P R E F A C E

No preface to this little book is really needed. I have written it in order to say some things which I wished to say. The opinions I hold I have stated as clearly as I could, and I have endeavoured to support them with fairness. I recognise that they are only opinions. But I venture to think that, even if they are not fully accepted, they may still be regarded as worthy of consideration, because of their having, if only in part correct, a possibly useful outcome in the general study of mental disorders.

A. M.

34 DRUMMOND PLACE,
EDINBURGH.
Jan'y. 1905.

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DREAMING

DREAMING

(1) IN ordinary circumstances we are made aware of the existence of such things as chairs and tables through the sense of sight ; but chairs and tables may, in certain conditions, be accepted by the mind as existing where they have no existence. They do not, in that case, reach the mind through the eye. They may be said to be seen directly by the mind itself without being imaged on the retina. The eye plays no part in this kind of vision. The mind, in other words, may be said, in certain conditions, to see without the aid of the eye. But the things so seen have no reality.

They are hallucinations. I give them that name because I can find no better. My difficulty, however, is scarcely with the name itself. It is rather with the fact that it habitually occurs in an environment which differs from that in which I am now to use it. As generally employed it refers to a manifestation of disease—often toxic in its nature. But the phenomena, which I here call hallucinations, are physiological. Disease plays no part in them. They have been called—‘*sane hallucinations*.’

It is beyond question, I think, that all the five senses—sight, hearing, touch, taste, and smell—may appear to be concerned in the hallucinations to which I now refer ; but it is desirable at once to point out that those things, which present themselves as so-

called *sane hallucinations*, need not have reached the mind, at any previous time, through some one of the organs of sense.

Sounds, tastes, and odours, which have no existence, are all thus imagined, but perhaps the most vivid fancies are those which seem to be furnished by the eye. All seeing need not actually be through the eye. There is what is called a non-optical or mind's eye vision, which does not reach the brain from an excited retina, but may be regarded as generated in the brain. Memory-images may so arise; that is, objects, which have at some time been seen through the eye, may be recalled by the mind, and may be then erroneously accepted as actually existing and present, when they do not exist. In like manner, creation-images may arise; that is, objects which have never been seen through the eye may appear to be seen as actually present, when no such objects exist. Both memory- and creation-images appear as these so-called *sane hallucinations*.

It is not my business here to deal with their appearance in waking life when there is no suspicion of disease, and when they may seem to be called up by the will and sometimes made to serve a useful purpose, as when an architect *sees* the building he has designed. Still less is it my present business to discuss their appearance as the outcome of disease, when, in certain conditions, the eye may even seem to follow changes in their position, as if they were being at the moment pictured on the retina and sent from it to the brain and mind. At present I am concerned only with their appearance in ordinary dreams.

(2) It is safe to say that no person ever gets through twenty-four hours of life without having hallucinations of this kind. They go, indeed, to make up our dreams. We see, and hear, and feel, and taste, and smell things in our dreams which have no reality, but which appear to the mind of the dreamer to be real.

Perhaps the hallucinations of delirium, whether toxic or non-toxic, which are commonly regarded as occurring in persons who are awake but in some state of disease, may be more correctly regarded as occurring in persons who are only awake in a limited sense—who may, at least, be asleep to the extent and in the sense of being unable to control and direct currents of thought.

The hallucinations which are pathological, and also those occurring in dreams which are not pathological, may lead to various kinds of bodily action, and in this way they may be said to influence conduct.

(3) It seems to me that there is no such thing as dreamless sleep. During the whole continuance of sleep, the mind, I believe, is occupied with a certain kind of thinking which works round what I have called hallucinations. I do not expect to be able to *prove* the correctness of this opinion as to the persistence of dreams all through sleep, but I think that it can easily be shown to be possibly correct. I go further, and say that many things show that it is probably correct. I may not be able to prove absolutely its correctness, but it is proper to bear in mind that it is quite as difficult to prove absolutely that it is not correct. My difficulty is frankly avowed. Many things, how-

ever, are taught in Biology as being certainly true, in regard to which a like avowal could be made but is not made. There is what has been called a 'conjectural biology.'

We do not and we cannot remember much of what we have been thinking about, while we are awake. This is unquestionably true in a very large sense. But nevertheless we do not doubt that we have been thinking continuously. We do not suppose that at any time all thinking had ceased, though we may be completely unable to recall what it was about.

(4) It is not a new thing to hold that there is no sleep without dreaming—in other words, that dreaming goes on unceasingly all through sleep. I have stated my own opinion strongly, but the same opinion has been nearly as strongly expressed by others. Sir Benjamin Brodie, for instance, may be said to express it when he writes: 'I believe that I seldom, if ever, sleep without dreaming.' Sir Henry Holland expresses it still more plainly when he says: 'No moment of sleep is without some condition of dreaming.' Godwin says much the same thing when he asserts that 'sleep is not a suspension of thought'—in other words, that dreaming is sleep-thinking. Dr. John Reid still more clearly holds the opinion, though he does not furnish me with a short apt quotation. Hazlitt, too, may be taken as holding that there is no such thing as dreamless sleep.

Descartes and his followers may, perhaps, be regarded as holding that the mind is unceasingly at work in sleep—even in the 'profoundest sleep' though 'the memory retains it not,' and Isaac Watts

says that 'the soul never intermits its activity,' and that we may 'know of sleeping thoughts at the moment they arise, and not retain them the next moment.'

Hippocrates, Leibnitz, and Abererombie have also been quoted as holding that there is no dreamless sleep, and so far as they express themselves on the subject they appear to do so.

Elliotson regards the opinion, as entertained by most of the last mentioned, as a mere assumption, the offspring of another assumption, namely, that we have souls, which are in their nature sleepless and by which we think. Elliotson's view, however, has no application to the opinions of Brodie, Holland, Reid, Godwin, and Hazlitt.

I think that I have fairly referred to the opinions of these writers, but if, in any case, I have overstated or understated, it will not affect my position, which I do not endeavour to support by authority.

(5) There is no risk in asserting that every one has some dreams which he thinks that he remembers clearly, and which he can recount in a fashion when awakened. I say 'recount in a fashion,' because he will very rarely be able to recount them without a liberal editing. Usually the editing will be very free. Indeed it is doubtful if either dream-thinking or the delirious thinking of disease is ever capable of being accurately and fully remembered.

Often when awakened a person will assert that he had not been dreaming. He may assert this very positively. Nevertheless, after the lapse of some time, he may remember that he had been

dreaming and may be able to tell what the dream was about.

If a person resolves every time he is awakened from sleep to ask himself *immediately* whether he had been dreaming, he will generally, if not always, be aware that he has just passed out of a dream, the details of which he may or may not be able to recall. It requires some determination to do this steadily and well; but I know a few resolute observers who for a considerable time scarcely ever failed to put this question at once to themselves on passing out of sleep, and who nearly always got a satisfying affirmative answer. Hazlitt was such an observer, and he says that he found that whenever he '*was waked,*' he was always aware that he had been dreaming, and that he never felt that he had passed as it were out of a state of non-existence. Robert Dale Owen was another such observer, and he records that 'in every instance he was conscious of having dreamed.'

(6) It may be held as certain that dreaming occurs, which may at first be wholly forgotten and which may be afterwards recalled. On the other hand, it may be forgotten and never recalled. This is not more than a reasonable assumption. It is at least possible, therefore, that there may be a great deal of dreaming which is completely forgotten. There is, indeed, but little of the dreaming we are conscious of having had which we remember with *clearness*. The watcher by the bedside of a sleeping person may have what he regards as satisfactory evidence that the person is dreaming—he may even have it proved and may

actually know what the dream was about, in the case of a person who talks in his sleep—yet that person, when the sleep ends, may feel quite positive that no dreaming had taken place. The absence of a knowledge of having dreamed thus seems to furnish no proof that dreams have not taken place.

It is impossible to determine the extent to which this unremembered dreaming occurs, and therefore also impossible to say that it may not occupy the whole time of sleep. I think, however, that it may be taken as certain that the wholly unremembered dreaming is very large, the partially remembered small, and the fully remembered still smaller.

(7) If there is no dreamless sleep, then it seems to follow that the brain is unceasingly at work either in dream-thinking or in that thinking which goes on when we are awake. Both kinds of thinking differ much in different individuals. The habits, occupations and idiosyncrasies of individuals no doubt give colour to their dreaming. During sleep each one is buried in his own world, and so it has been said that dream life becomes a revelation of individual character. But the thinking of persons who are awake differs as much in quality and character, being also influenced by constitution, habits, and many other things. Aristotle held that in waking life we all have a world in common, but that in dreams each has his own world; but there is no truth in this, for there are as many worlds to those awake as to those asleep. So it seems to me. Perhaps Aristotle's world of waking life is the world of our doings, of our goings to and

fro, of our law making and law breaking, and what not. But even if we so read Aristotle, I think he is wrong, for each one has a world of action, struggle, debate, hatred, and love, quite as much his own as is the world of his dreams.

A great deal of thinking awake is nearly valueless, chiefly for the reason that it more or less resembles sleep-thinking.

There are persons, indeed, who can seldom be correctly described as quite wide-awake. It is the experience of every one that there is a wakefulness which is incomplete. But the *quality* of the thinking does not affect the question of its continuousness either in those asleep or awake.

The continuity of the thinking part of brain-work may appear to prevent that refreshment to the *mind* which we commonly regard as obtained through sleep by the stoppage of such work. But refreshment may come without a stoppage of work. Change may be sufficient—a change, in this case perhaps, arising mainly out of the withdrawal of a compulsion to follow a particular course.

(8) Sir Thomas Browne calls sleep ‘the Brother of Death,’ and says that we may literally be said to die daily, and to be practically dead during ‘one third of our lives.’ But, as Lyon Playfair well says, this is poetry and not science. Sleep is the Preserver of Life, and not the Brother of Death. It is, as Playfair points out, ‘the period when a greater rate of nocturnal constructiveness in the body balances the destructiveness of diurnal labour.’ The sleep of Life cannot in any way or sense be compared with the so-called

sleep of Death. They are as far apart and as distinct as Life is from Death.

(9) We are accustomed to say, that we think with our brains, and this is loosely correct. In a like way, however, it is loosely correct to say that we breathe with our brains, and that we carry on the circulation of the blood with our brains. It is at least true that, without the brain, thinking, breathing, and the circulation of the blood would cease. The other great nervous centres would not be sufficient. All these, and a thousand other things, are manifestations of work in or by the brain. But it is clear that the brain needs the body to carry on breathing and the circulation of the blood, and it is nearly as clear that the brain also requires the body for that manifestation of its work which we call thinking. Support will be given to this view, in what I have to say afterwards about laughing and blushing. There is more than appears on the surface in the statement that we think with the whole body. At any rate, we cannot give manifestations of thinking without the body, looked at as additional to the brain, which last of course is itself a part of the body.

(10) In some parts of the work of the brain it is certain that there is no stoppage. Its work, for example, in carrying on respiration and the circulation of the blood never ceases. The heart and the lungs have no cessation of work from birth to death. The movements needed in these things are called involuntary, and they are correctly enough so called, though perhaps they are not involuntary in an absolute

sense. Breathing can to some extent be directed by the *will*. So the *thinking* part of the brain's work may also be regarded as in a sense involuntary—though it can be modified and directed by the will, it is nevertheless independent of the *will*, to the extent at least that at no time can we choose whether we will think or cease from thinking—and, like other parts of the work of the brain, it is at least possible that it may go on without stoppage while life lasts under control of the will when we are awake and without that control when we are asleep.

Of course all the unceasing work of the brain tends to wear it out, and does wear it out; but this wearing out is not the result of any one part of its unceasing work. The thinking part of its work, indeed, does not seem to be specially wearing out in its effects. The maintenance of respiration and of the circulation of the blood are also wearing out, and perhaps more actively.

(11) If thinking of some sort goes on all through life, then, as John Reid says, it may be 'so essential to life, that, if the association is broken, death must inevitably ensue'—as inevitably as when breathing ceases or the circulation of the blood.

It so happens that there is a Death from which there may, or may not, be a coming back to Life. I refer to syncope, which is entirely different from sleep of any kind or any degree. It also differs radically from the deepest coma or the deepest drug narcosis. During all such states delirious thinking goes faintly on. But there is no delirious thinking—no dream-thinking—no thinking of any kind in

syncope. Thinking of all sorts then ceases. It is a true state of suspended animation. Indeed it is actual death while it lasts, and it often lasts for ever. If recovery takes place, both life and thinking come back *together*, so that there is no contradiction within the view I take.

The point is that thinking is essential to the continuance of life. It need not be the kind of thinking which is under direction of the *will*, but thinking of some sort must go on if life is to continue. When all thinking ends, life ends. We cannot think unless we are alive, and we cannot be alive without thinking. All this seems to be true, and no difficulty arises out of the inability to define with precision what *living* and *thinking* are.

In the work of the Psychological Research Society, this coming back from Death to Life, as happens in the restoration from syncope, has not received the attention it deserves.

(12) It is beyond question that thinking goes on in some parts of sleep, and in those parts consciousness is as certainly not lost. Consciousness, indeed, is co-extensive with all mental operations, and, if so, it must exist in dream-thinking—both in that which is remembered and in that which is forgotten.

There appear to be infinite qualities and gradations of consciousness, but the word, as ordinarily used, denotes the higher qualities and gradations. It is mere phrasing and explains nothing, to speak of the more obscure mental processes, those, for instance, which are under the influence of habit, say in the playing of music, as sub-conscious. In like manner

it is nothing but phrasing to talk of 'a half-consciousness existing in dreams.' So long as there are mental operations of any kind, consciousness in some degree exists, and this covers everything. We can speak properly enough of the conscious mind, but we cannot speak of the unconscious mind. Consciousness does not exist apart from mind.

The term is not susceptible of definition, but it is used with exceeding looseness and with meanings which differ greatly. Most subtle and ingenious differentiations enter into the various clothings of its meaning, but, so far as I am able to discover, these are not understood of the people, at least of those of them among whom I have my being.

(13) It seems desirable that I should say here that I recognise the danger arising from the use of undefined, or rather, perhaps, undefinable words, but I feel obliged, or at least it suits me, to use words of this character. I cannot, for instance, tell what is meant by *Will*, but I assume its existence and use the word. Nor do I know of any satisfying definition of the words *Thinking*, *Sleeping*, *Dreaming*, or *Remembering*. But I shall use these and other such words as naming things which, in the general opinion, have an existence, and I do not think that my doing this will cause any misunderstanding of the special views I express in regard to dreaming.

(14) While we are using the thinking part of the brain's work in a state of wakefulness, we bring it under the control and direction of the *Will*. In other words, we do not allow it to go on without

guidance. We direct it into certain channels and keep it there. We exercise an inhibiting power over it.

The *Will* does its controlling work in regard to thinking more easily in some directions or conditions than in others. In adults, for instance, it can more readily insist on the mind's giving attention to certain things, than it can insist on the withdrawal of attention from things to which it has been given, especially if these things involve the emotions rather than the intellect, even though the attention first given to them was under the direct guidance of the *Will*. Otherwise stated, it can, in the case of an adult, more easily keep thinking employed on the solution of a problem in mathematics or on the writing of an essay, than it can withdraw it from employment in considering a bereavement by death or the loss of a fortune. This relates to adults. Nearly the opposite holds good in regard to children. In their case, the *Will* has difficulty in keeping the mind engaged in purely intellectual work, but finds it easy to withdraw it from dwelling on a sorrow or a disappointment. The child wills to weep and grieve over a broken toy, but the arrival of a playmate or the gift of a new toy makes it immediately *will* to be happy and to cease weeping. Hence it happens that worry usually attends the work which does harm to the adult brain, while the brain of the child is little liable to injury from worry, but can be easily hurt by excessive and forced intellectual work.

(15) It has often been pointed out that there is nothing more laborious than the sustained exertion of

Will, whether it be employed in things so different as attending to a subject of study or directing our limbs in unwonted action. In forcing attention the *Will* becomes fatigued, and it is the *Will* which comes to need rest and which gets it in sleep. In the *Thinking* which goes on in the state of sleep there is an absence of the sense of weariness. It is not then under control or direction. It seems, if I may so write of it, to be left free to sport, and through this free unrestrained play, as well as through the *Will's* rest from work, refreshment appears to come to what we call *Thinking*, the weariness of which may be regarded as arising out of a forced subjection to the directing power of the *Will*. Dreaming has been spoken of as a mental recreation—the mind being regarded as disporting itself. It is the directing power, which chiefly demands rest through a cessation of work, and it finds it during sleep.

Refreshment of course also comes to the *Will* from the repose, during sleep, of the muscles, which it has so constantly to call into action in those who are awake.

Darwin says that it is the 'part of sleep to suspend volition.' It is perhaps not quite safe to go further, and say that the sole necessitating cause of sleep, and the only cause of fatigue, is the exercise of volition. The attitude of the cataleptic, not being voluntary, seems to cause no fatigue. What the cataleptic does could not be voluntarily done. So the ravings of delirium are not directed by the will, and fatigue does not seem to follow. Dream-thinking is involuntary, and does not tire us. So is it also with breathing and the beating of the heart.

If the mind were kept incessantly at work for a long time in a quite orderly manner, that is, kept constantly at work by the power of the will in a particular channel or directed to a particular subject, injury would almost certainly follow. Fortunately, in normal conditions, no such protracted and complete inhibition is possible in the case of adults. After a time the mind refuses to obey the will and breaks off into sport; or rather, to put it more correctly, the will gets wearied, gives up inhibiting, and permits *thinking* to play without any control, during which play there is a manifestation of what may be called mental disorder, and so the injury is averted. I have elsewhere shown that children and adults are not in line in this matter, as regards both the intellectual and emotional workings of the mind.

(16) It is necessary to bear in mind that there are different degrees of Sleep. This is evidenced in the familiar phrases—deep sleep, light sleep, broken sleep, half-awake, wide-awake. It would be easy to multiply phrases of a like kind which are in common use. The constant employment of such phrases points to a thing of importance. It is this. There is certainly an imperfect sleep and an imperfect waking. There is, indeed, every possible variation from complete wakefulness to profound sleep. The gradation of states which connects the waking and sleeping life of man has been called infinite, and not without reason.

I do not think that it can be held by any one that thinking ceases during states of half-sleep, though such thinking as then goes on is of little

value, being only partially directed and but loosely kept to its subject.

(17) It has been alleged that during sleep valuable legal opinions have been written, difficult mathematical problems solved, and poetry and music of a high character composed. All such things I believe to be fables. Belief in them, indeed, has never been asked except upon slender evidence, which under examination falls to pieces. In dreams there is no coherent *thinking*, directed to a particular end and kept there. Spurzheim goes the great length of saying that 'persons sometimes reason better asleep than awake,' but of this there is no evidence of any kind, even as applicable to persons whose reasoning when awake can scarcely be said to have value. As regards persons of high intellectual power, I think that it may properly be called nonsense.

In like manner, though walking in sleep seems to be a well-established possibility, the stories of the wonderful and all but impossible balancings of sleep-walkers on roofs of houses and narrow ledges may be accepted as the outcome of a prevalent desire to manufacture the marvellous. Not one of such stories seems to me to be well-established, even admitting that the sleep-walker may not have been in deep sleep.

The somnambulist is said to 'walk on perilous ridges with steady feet,' and to perform feats of a character which he would be quite unable to perform if he were awake, and which no other person, who was awake, could perform. Such statements are freely made and fully believed, but I have

not succeeded in finding any competent observer who could say that with his own eyes under proper conditions he had witnessed the performance of these marvellous feats. I have not had very many opportunities of sifting statements of this nature, but such as have fallen in my way have invariably led to the unhesitating conclusion that they were in a strong sense inaccurate. The temptation to magnify in such matters is wide and deep. Common sense and common experience should lead to the expectation that magnifying will take place in the narratives of their occurrence, and, therefore, to a refusal to accept them as true if they are not convincingly supported. Nothing, so far as I am aware, is known to justify the belief that in sleep-walking 'resources are brought into play which are beyond ordinary reach.'

(18) It is difficult to say how far a drowsy person is from what is called sleep. He may be very near it. He is practically asleep if he is exercising no control over his thinking, and the less the control he exercises the nearer he is to sleep. So it is also with the man who is in what we call a reverie or brown study—'apparent thought, but real vacuity,'—or whose mind, in popular phrase, is wandering. He may be looked on as in a state intermediate between sleep and waking—in what has been called a slumberous state. Going further, it can scarcely be questioned that there are persons who are properly enough described as rarely wide-awake, and whose ordinary thinking approaches in character to what I have called dream-thinking. In this state of half-

sleep, if I may so call it, it is quite certain that thinking never ceases. It is only a little less certain in a state of deep sleep.

(19) It has also to be remembered that states of full sleep may be, and often are, of extremely short duration—so short as to be accurately enough called momentary. Slumbering *moments* are not a fancy. Droppings into these short sleeps may occur with great abruptness, and the restored wakefulness may come as abruptly. Indeed a person may scarcely be aware that sleep has occurred. There may be a frequently repeated, as well as a rapid, passing from a state of wakefulness into sleep and out of it again. It has been actually observed to occur three times in a minute, but there is no reason for thinking that it may not occur more frequently. The most remarkable short sleep on record is one in which the sleeper had what he regarded as ‘a long dream carrying him through many scenes and events,’ and which occupied fifteen seconds—the measurement of the time being apparently satisfactory.

Such phrases as ‘dropping sleep-ward,’ ‘dropping off to sleep,’ ‘dropping into a slumberous state of mind,’ represent fact or experience.

(20) A point of great importance is that during these brief periods—these moments—of sleep, dreams and hallucinations occur, and in the study of apparitions this fact must not be lost sight of, for it is nearly certain that many of the spectres we hear of are only dream hallucinations. They may present themselves in dreams during the momentary periods

of sleep into which persons fall, and out of which they come, with extreme abruptness and without the consciousness of having been asleep. It seems to me almost beyond question that many apparitions are thus explained. That some of them are so explained is all but certain.

Perhaps I should illustrate how I think that apparitions may be nothing more than dream hallucinations. A. B., a gentleman of culture and strong character, called one hot day, after a hearty lunch, on an ecclesiastic in a high position, who happened to be engaged in his library at the time of the call. A. B. was shown into a room opening off the library, and requested to wait. He sat down beside a table, and, with his elbow resting on it, he leant his head on his hand. While in this position he saw a man in clerical costume come through the door communicating with the library, without any opening of the door, walk slowly down the length of the waiting-room, and pass out into the corridor, again without any opening of the door. A. B. was absolutely certain that he had seen an *apparition*, and was surprised and hurt when I expressed a doubt. He called on me to explain, and I said that it was at least possible that he had been asleep for some moments, that if he had slept at all, however short the time of the sleep, he must have had a dream, if I am right in thinking that there is no dreamless sleep, and that thus what he regarded as an *apparition* might be nothing more than a dream hallucination. He assured me persistently that he was continuously wide-awake, but I assured him that these moments of sleep often

occurred without any consciousness that they had occurred. He refused to be deprived of his ghost, and I refused to believe in the supernatural when the normal was sufficient.

(21) The character of the *thinking* in dreams is what we should expect, if the views I have been enunciating are sound. Dream-thinking is rapid and confused—passes suddenly and frequently from one subject to another and from one place to another, without causing surprise—time and space are abolished—many adventures are passed through in a very short time—living and dead persons appear together in one place, and then instantly in some other far-off place, either separately or in new associations—there is no coherence in the thinking—judgment is in abeyance—the most incongruous appearances or occurrences create no wonder, and there is often a confusion as to personal identity. The mind is in a state of anarchy, and thoughts ‘riot on in confusion.’ As Dale Owen says: ‘We see, but not with our eyes; we hear, but not with our ears; we speak and are spoken to, without the sound of any voice; we are moved to pleasure, and anger, and passion with no objective reality to arouse these feelings; we reason incorrectly; time has no limits, nor has space; and the grave gives up its dead to us.’

The figures seen in dreams and the sounds heard in them have no reality. No doubt they are largely furnished by the memory of impressions made at some time on the senses, but it must not be forgotten that the figures of our dreams enter into combinations, undergo changes, and perform acts

which have never been seen by us when awake. Dreams, in short, are by no means always mere echoes.

Things are seldom recognised in dreams as things of the past ; everything is present and actual ; we rarely imagine that we are thinking over, or relating to others, the story of past occurrences. It almost never happens in dreams that we think we are dreaming and know ourselves to be asleep, and, so far as I can learn, we never dream of previous dreams, which seem to fade away too completely, though it happens occasionally that a dream is repeated with more or less fulness, and also that a person, roused out of sleep in the course of a dream, may fall asleep again and resume his interrupted dream. During this short period of waking the dream hallucinations may seem to continue.

Dreams are not ‘a mere repetition of sentiments and ideas previously experienced.’ They are not ‘subjective impressions of images already registered in the brain, practically the same to consciousness as impressions from real objects.’ This would make dreaming a mere form of memory, but ‘we imagine, create, and invent in dreams, though all such imaginings, creations, and inventions are useless, being the outcome of thinking when in a state of disorder. In our dreams we may see things we never saw, hear sounds we never heard, and do things we never did or saw done.’

(22) There is another character of sleep-thinking which has great interest. It has been discussed with fulness by the late Miss Frances Power Cobbe. I refer

to the absence of the moral sense in sleep. It would shock us to know all the improper things which are done in sleep with unblushing effrontery by the most *proper* people. The sense that what we are actually doing is morally good or bad is never wholly absent in our waking hours, but, as Miss Cobbe says, perhaps a little too strongly, it is *never present* in a dream. We may at least go the length of asserting that ‘if the moral sense be not wholly suppressed in sleep, there is certainly evidence enough that it is only partially active.’ A kind-hearted person may commit a cruel, an honourable person a base, and a virtuous person an immoral deed in sleep, without feeling that anything wrong has been done. So much is certainly true. ‘Passions which never for a moment sullied our consciousness, sentiments the very opposite of those belonging to our idiosyncrasies, present themselves in sleep, and are followed out by their appropriate actions, just as if we were then not ourselves at all.’

Others have been as clear and as emphatic on this point as Miss Cobbe. Elliotson, for instance, says that in dreams ‘we perform the most ruthless crimes without compunction, and see what in our waking hours would cause unmitigated grief, without the smallest feeling of sorrow.’ Dale Owen says that ‘we are dishonest, cruel, and immoral in our dreams.’ Manacéine says that ‘we all accomplish acts in dreams, and experience feelings, which are in complete contradiction with our deepest convictions and incompatible with our character. Good and gentle persons may be transformed in dreams into murderers and rascals.’ And again, ‘Every one sometimes dreams of acts, thoughts, and desires in

direct contradiction with all his whole character, his convictions and tastes; he dreams of things which cause him horror when awake and fill him with disgust. The best and most honest of men sometimes execute in their dreams the most dishonest and cruel deeds.' Maudsley tersely says that, if we were held responsible for what we do in our dreams, there is no man living who would not deserve to be hanged.

If the moral faculty were not in abeyance while we dream, then I should have difficulty in holding that dream-thinking is a state of mental disorder, because in all forms of mental disorder the moral faculty participates in the disorder.

(23) It is of importance to bear in mind that we almost never feel astonishment or surprise in our dreams. We commit wicked and immoral deeds in our sleep, but we are neither troubled nor surprised. We see the most extraordinary objects, we do impossible things, and we witness the most grotesque or the most horrifying occurrences without any astonishment.

Perhaps this absence of wonder may be explained in the same way as we explain the failure so common in dreams to note any relation between cause and effect. If we felt surprise, or saw things as the effects of causes, it would involve reasoning or the use of directed and controlled thought, but all dream-thinking is undirected by the *will*. As has been well said — 'the voluntary concentration of attention is impossible in dreaming.' At least it does not occur.

(24) If I have been correctly describing the characteristics of sleep-thinking, I have been establishing, as

I went along, an analogy between dreams and delirium. There is, indeed, so far as I can see, no difference of kind, but only a difference of quality between dreaming and raving. The two things are varieties of the same thing. In all large particulars they agree. There is in both the same rapid thinking, the same incoherence and irrelevance, the same production of 'wild work' by 'misjoining shapes,' the same existence of hallucinations, the same confusion as to personal identity, the same abolition of time and space, the same inaction of judgment, and the same absence of the moral sense. Rush regarded a dream as a transient fit of delirium; Abercrombie saw an analogy between dreaming and insanity; Cabanis, I think, makes Cullen the first to point out the similarity between dreaming and delirium; and Wundt calls dreaming 'a normal temporary insanity.'

Dreams and delirium are alike manifestations of that *thinking* which is not under the control of the will. If the thoughts of the dreamer were manifest to the bystander, and if his state were persistent, he would be correctly enough described as in a state of mania. It is true the ordinary maniac appears to be awake, but this may be only true, as I have already said, in a limited sense. Like dream-thinking the ravings of the maniac appear to cause little or no fatigue, which perhaps explains why these ravings sometimes continue unceasingly and for a long time without sleep—there being no *Will*, in a state of weariness from work, to demand rest in sleep. In acute mania there is often a protracted state of wakefulness.

I give a broad meaning to mania here, as the

name of a raving mental confusion, which may of course be toxic, for it is easy to look on any disease as of that nature.

The unreal images of dreams may continue to appear for a short time after what seems to be waking, but is not a full waking. This happens often to children and causes great fright. It happens also to adults, and may in their case be painful and perplexing. It may happen also to a sleeper, half-waking during a vivid dream, to fall back quickly into sleep and complete his interrupted dream.

(25) There are, of course, differences between dream-thinking and the raving of delirious or maniacal persons, but they are scarcely more essential in their nature than are the differences between the character of thinking in the delirium caused by different forms of disease. The raving of a typhus patient is not the same as that of a smallpox patient, or of a person in delirium tremens. Each intoxicant seems to produce its own form of delirious thinking, but the differences are those of quality and not of kind. They agree in essentials, and all of them appear to be illustrations of the thinking which is uncontrolled by *Will*, as thinking is in sleep.

I do not make any examination of drug-dreams. I have had some occasion to study them, and they are full of interest and instruction, but they do not concern me at present. They occur in pathological sleep, but the dreaming about which I write occurs in physiological sleep.

(26) Perhaps it is desirable to point out that it is

not necessary, in order to induce a fatigue of the *Will* from work performed in controlling and directing mental operations, that it be exercised in efforts to keep the mind engaged in what is spoken of as intellectual work. The fatigue of the *Will*, for instance, may be as great, or nearly so, in the cases of a compositor setting types or a tailor making button holes. In the ordinary *Thinking* of persons who are awake, there are as many varieties of quality as there are persons, and there are also as many varieties of the power of the *Will*.

(27) The *Thinking*, *Dreams*, *Will*, and *Memory* of infants need a separate telling. But so far as I can see, that telling would not disturb the opinions which I have been advancing.

It may, however, be useful to say here that children appear to dream almost from their birth. Their thinking may be largely, at first perhaps entirely, dream-thinking, and memory with them may, in a sense, consist of hallucinations only.

The prenatal condition falls to be considered with the *thinking* of infants.

Then there are false reports to the brain by the organs of sense themselves in consequence of their being in a morbid condition, as for instance, in double vision, but it does not fall within my present object to discuss these. They have no real bearing on the opinions that there is no such thing as dreamless sleep, and that dream-thinking is undirected thinking, more or less of the nature of delirium.

(28) My subject, I know, is one regarding which a

crowd of persons speak with the utmost confidence on what they hold to be most complete information, derived nearly always from personal experiences, in which wonders abound. This I have had well in remembrance.

Remarkable dreams have been told to me by many who learn that I am interested in the subject, and when I doubt the accuracy of the narrative, sometimes offence is taken. But generally my doubting begets doubting, which ends in an agreement as to its being extremely difficult to tell a dream of any length without copious editing. When the dreams in question have been told over and over again, it is generally admitted that the early tellings differed from the later, additions or omissions of more or less importance having been made and then accepted as a remembered part of the dream.

There is in dreams a very imperfect memory of waking life. Nearly as imperfect is the memory of dream life in those who are awake. It may happen, however, that in sleep a memory may come up of an occurrence in waking life, which has been quite forgotten. But in like manner some altogether forgotten event may be suddenly and inexplicably remembered, while we are awake. There is nothing supernatural about such things. If there are ever supernatural phenomena in dreams, they are not known to me. I refer to such phenomena as those of telepathy, transference of thought and emotion, clairvoyance and premonitions. I neither deny nor admit the possibility or occurrence of such phenomena. It is mere foolishness to call a thing impossible. All the length I go is to say that I have never met

with sufficient or satisfying *proof* of the existence of such phenomena, either in waking life, sleep life, or delirium life. Of the invasion of the spirits of living or dead persons into our lives, either when awake, or asleep, or delirious, I know nothing for certain. Nor do I know anything for certain, or even as probably true, either about warnings or revelations of the future. It is true that in dreams we really seem to be, without questioning or wonder, in places far distant, which may be known or not known to us, to see persons whom, when we are awake, we know to be dead, but whom we accept in dreams, without any surprise, as alive, to talk and act with persons who are new to us and whom we have never seen when awake. All these and many other such things occur in dreams, and I can perhaps understand the inquiry:—Where are we during such visions? Are we still *here*, or *away from here*? I can only answer the inquiry by expressing my personal belief that we are still *all here*, in as full a sense as that we are *all here* at any time and in any condition. I am not able to be sufficiently credulous to hold any other belief. I cannot accept as in any degree sufficient the evidence that has been adduced to show that I am wrong in this belief.

Sir William T. Gairdner, K.C.B., whose interesting Typhus Delirium Experience appears in the paper by Professor Coats on ‘Sleep, Dreams, and Delirium’ (*Glas. Med. Jour.*, vol. xxxviii. 1892, pp. 241-261), has written to me about his dreams generally, and he concludes his letter with the narrative of a dream, which, as he correctly says, ‘if it had only fulfilled itself, might have become famous.’ He prefaces the

narrative by this statement: 'In all my individual experience, now extending over more than the usual term of life, I have never met with anything suggestive in the remotest degree of telepathy or second sight, or of dream prophecies or any other fact bearing on the marvellous.' He then goes on to tell the dream to which I have referred. 'In crossing the Atlantic in 1891,' he says, 'in delightful weather and perfect bodily health, and without a shade of anxiety on my mind so far as I was aware (in waking consciousness), I was suddenly aroused in the very early morning, say, three or four A.M., out of a perfectly sound, and, as I should call it, dreamless sleep, by the apparition of a telegram written on the usual paper, and presumably from home, in these words: "Miss Dorothea died at ——," all the rest being blurred and indistinct, but these words having a startling distinctness and a vivid sense of reality. I was not, I think, in the least degree alarmed at first, and certainly had no superstition about it on discovering that it was only a dream; but, failing to get any more sleep, I rose early, took my bath as usual, and went on deck, where I had to repeat the story of my dream to each one of some three or four companions who were on board, of whom I will only mention Sir John Batty Tuke, Professor Young of Owens College, and Professor Cunningham then of Trinity College, Dublin. Any of these gentlemen will confirm my saying that I attached no special importance to this dream in the way of a scare or a superstition, but in this way it got abroad to a certain extent within a small circle on board—in such a way as would have ensured it a widespread fame *had it only*

come true. In discussing the matter at breakfast I remarked (alluding to telepathy) that the telegram was clearly, judging from its terms, not from my wife or any member of my immediate family, and could only have been despatched by a servant or some one with whom I could not be supposed to be in telepathic *rapport*. From this point of view it clearly refuted itself, and yet the effect upon my mind was such that, upon arriving at New York, I at once despatched a telegram announcing my arrival and making inquiry, the reply to which showed that the family were pursuing a quite undisturbed course at St. Andrews.'

Sir William describes himself as aroused out of sound sleep by the apparition of a telegram, but I think this only means that he became suddenly awake on seeing the telegram during sleep. He does not say whether he knew in his dream that he was a passenger on a great ship in mid-ocean, but he says that the telegram was written on the *usual paper*, by which I take it that he means the paper used here on shore.

If it had happened that the death of Miss Dorothea took place about the time of the appearance of the telegram to so distinguished a man as Sir William in his sleep, I scarcely think there would be any more startling instance on record of a so-called telepathic message. But most happily the death did not take place, and so the story of the dream will be forgotten. Tens of thousands of similar dream-stories have that fate.

(29) If there be no such thing as dreamless sleep, it

seems to me that the fact has not been so fully accepted as it ought to be, because it can scarcely fail to have important bearings in various directions. I have endeavoured here to bring under consideration the opinion that it is a fact.

But my chief object at present is to show that in dream-thinking we are subject to frequently recurring periods of what may be properly called mental disorder, not only without injury but with benefit, and that there is a disordered state of mind which is not pathological in any correct sense.

I hope to be able to show the occurrence of a similar thing both in laughter and in blushing.

(30) Although it has not much to do with the opinions or contentions dealt with in this essay, perhaps it may be useful to indicate briefly the effects on dreaming of a deprivation from birth of one or more of the senses.

I do not know of any case in which taste or touch, and only of one case in which smell was completely absent ; but the cases are numerous in which sight or hearing was absent, either from birth or from very early childhood ; and there are several cases in which both sight and hearing were absent. One case is known, in which sight, hearing, and smell were all absent.

In only two cases of blind deaf-mutes, so far as I am aware, have we such information in regard to dreaming as can be considered valuable, because only two persons so affected have received such an education as made communication with them on this subject possible. These two persons are Miss Laura

Bridgman, who died in 1889, and Miss Helen Keller, who is still alive and young and as well able to describe her dreams as any one having from birth the full use of all the senses.

Both Miss Bridgman and Miss Keller are Americans, and it is much to the credit of their country that they have received in it so complete an education. In no other country as yet have the difficulties of conjoined congenital deafness and blindness been so fully overcome. Miss Keller's pride in the land of her birth, which I know to be great, must be deepened by the reflection that, if she had been born in any other country, she would almost certainly have still been in a world of complete darkness and silence. Though the chief doors of access to her mind were closed, Miss Sullivan, aided by some other teachers, with a courageous and intelligent perseverance, surmounted every obstacle that stood between them and their high aim, and Miss Keller may now be correctly described as even more thoroughly and more widely cultured than ladies of her age who have the use of all their senses, and who have had every educational advantage. It has been said of her that 'she is the only well educated deaf and blind person in the world.' Fortunately for her teachers, they found in their pupil a desire to learn quite as strong as was their desire to teach. Mark Twain has said that 'the two most interesting characters of the nineteenth century are Napoleon and Helen Keller'—*his* way of giving emphasis to the victories won by Miss Sullivan and her pupil.

(31) Miss Keller has been much questioned about

her dreams—too much perhaps—for, as I have been at pains to point out, the recollection of dreams is almost never clear and complete, and they can very seldom be recounted without large editing. When a dream has been told, and re-told, and told again, it no doubt assumes a shape which it retains in further tellings; but, if it is a long dream, the credulous only will accept it as a correct narrative of the actual dream. Indeed it is doubtful if a long dream can ever be accurately and fully told, though the teller may have no thought of falsifying either by additions or omissions.

If this is correct, it becomes scarcely proper to ask any person, but especially a young person, to write an account of his or her dreaming; yet in the face of my holding this opinion, I have to confess myself a frequent transgressor in the matter.

(32) I first applied for information regarding Miss Keller's dreams to Mr. Hitz, the Secretary of the Volta Bureau (at Washington, D. C.) for the Increase and Diffusion of Knowledge as to the Education of Deaf-mutes. I also applied directly to Miss Sullivan, Miss Keller's enlightened teacher, who has written me on the subject, and has also sent me for perusal a short statement by Miss Keller herself in her own type-writing. Then I have further the full account, which Miss Keller wrote for Professor Jastrow, and which appears in his book, *Fact and Fable in Psychology*. The outcome of all this information, or at least of what seems to me important in it, I hope to be able to give in a few paragraphs.

(33) My information regarding Miss Bridgman's dreaming is also somewhat full. It is partly derived from the Reports of Dr. S. Howe, a man of great distinction. These Reports were written annually during the course of her education, which he originated and conducted. They are now scarce documents, and came into my possession many years ago. Another important source of my information about Miss Bridgman's dreams is the account of her life and education by Mrs. Lamson, one of her teachers.

(34) Miss Keller is now about twenty-two years old. She became totally blind and deaf at the age of nineteen months. This is so early an age as to be practically the same as being born blind and deaf. She had reached the age of seven when her education began, and she displayed from the outset considerable intellectual power and a great desire to learn. The efforts to teach her to speak orally began when she was eleven years old, and she now speaks in that way to some extent, though she still generally uses her fingers—indeed almost entirely in conversation with Miss Sullivan. One other fact regarding her should be kept in mind. She is a well made healthy lady, of very pleasant appearance. In other words, her only wants are the senses of sight and hearing. In all other respects she is well-conditioned.

(35) Mr. Hitz was visiting Miss Keller's mother when my letter reached him. I asked in it for information about Laughing and Blushing, as well as about Dreaming, but I refer here only to what he

says about the last. He tells me that Mrs. Keller stated that in her opinion Helen's dreams 'were very much like those of hearing people, and that never to her knowledge had she dreamt of being either blind or deaf.' She said further that Helen's dreams, like those of ordinary persons, 'were sometimes very grotesque,' and she gave the following illustration: Helen 'remembered playing whist in a dream with cards made of small-sized marble tombstones,' and she *wondered* how she handled and shuffled them as well as she did. Mrs. Keller does not appear to have definitely told Mr. Hitz whether Helen's *wonder* occurred during her sleep or afterwards, but the inference from what she said is that it occurred, as we should expect, after she awoke.

(36) Miss Sullivan says, in her letter to me, that Miss Keller, in a book which she is about to publish, will give extracts from a College 'theme' which she wrote about her dreams. She regards her pupil's dreams as to a considerable extent 'literary not only in their content, but in the way they phrase themselves to her,' and she thinks that they are largely suggested by her reading, and thus appear to her in a more ordered manner than is usual in dreaming. She says that Miss Keller is strikingly normal, that it has been the object of her education to make her so, and that she does not offer so much of '*unique data*' to Psychologists as they might expect. She gives me interesting information about Miss Keller's character, which has indirectly a bearing on her dreams. She says that Miss Keller 'has never been detected in a wrong act,' and that she does 'not believe she has

ever committed a wilful conscious wrong deed.' This and everything else communicated to me by her and others show that Miss Keller is a remarkably amiable lady. But the best people on earth do bad and wicked things in their dreams, and therefore I read with interest Miss Sullivan's further statement 'that the only wicked thing Miss Keller can remember doing in her dreams is murder, but always in defence of her teacher or of some one else.' This qualification, however, makes it no murder and no wickedness. But Miss Sullivan has been good enough to send me an unpublished fragment about her dreaming by Miss Keller herself, in her own type-writing, and this, perhaps, to some extent brings Miss Keller into line with what is normal among those who see and hear. She writes: 'There are some unaccountable things in my dreams. For instance, although I have the strongest, deepest affection for my teacher, yet when she appears to me in my sleep, we quarrel and fling the wildest reproaches at each other.' It thus appears that in dreaming she does things, which, like all other people, she would be sorry to do, and would not do, if awake—something contrary to her nature and to what is right. Miss Frances Cobbe, to whom I communicated the foregoing statement by Miss Keller, wrote me regarding it as follows: 'I do not think that the theory of the non-existence of the moral sense in dreams [see paragraph (22)] could have a more striking exemplification than the case of the amiable Helen Keller. It is, of course, the working of the irascible passions in sleep which suggests her dreams (*in regard to her teacher*)—with no conscience (*then awake*) to control them.'

(37) Professor Jastrow, in his *Fact and Fable in Psychology*, gives a somewhat long account of Miss Keller's dreaming, sent to him by herself. In that account she says: 'Like most people, I generally forget my dreams as soon as I wake up.' This is no doubt true. It is the experience of every one. And it must be kept in mind that the remembered dream has probably had something special about it, which caused it to be remembered. It is not one of the ordinary dreams which fill up the hours of sleep. It is clear that no one can write an account of his dreaming, which is not founded on the small number of his remembered dreams. The many which are forgotten count for nothing. It follows that the account must be incomplete, and almost certainly inaccurate—perhaps highly inaccurate. Even the remembered dreams are only partially remembered, and in the telling of them there is nearly always a free editing. It is not believed that any one will question the correctness of this opinion. Miss Keller says further in what she wrote to Jastrow: 'I obtain information in dreams in a manner which it is difficult to describe'; 'my *mind* acts as a sort of mirror, and *thoughts* describe (to me) the events going on around'; 'I could not see or hear, but my *mind* was my guide as well as my interpreter.' This is very interesting, but I shall leave it as it stands, and not risk a translation into what it appears to me to mean. She also says in this account of her dreaming, that she hardly ever dreams of anything that has happened the day before, by which I take it she means that she does not dream of occurrences as having taken place before the time of her dream. Everything in her dreams is

present, as it is in the dreams of ordinary persons. She says that her friends in her dreams speak to her by their fingers, but that she herself, since she has learned in some measure to speak orally, speaks often in her dreams with her mouth. She writes of *hearing* in her sleep, just as she speaks of hearing when awake, as, for instance, when she says that she *heard* the roar of the Niagara Falls, by putting her hand on a pillow and *feeling* the roar. This *feeling* is *hearing* to her, and she speaks of it as *hearing*, quite naturally. So it is also with her use of the word *seeing*.

(38) Laura Dewey Bridgman, the other blind and deaf girl who was successfully educated, was born in 1829 and died in 1889. She was not so highly educated as Helen Keller, but still her education was full, and her case attracted much attention. George Combe and Charles Dickens both visited her during their stay in America. The oral teaching of the deaf-mute had not then made such progress as it had done when Miss Keller's education was in progress, and consequently Miss Bridgman had to depend almost entirely on finger speech.

We have an important statement by Dr. Howe as to her dreams. It was written after she had been for some time under his care and observation, and he must be regarded as speaking with weight and authority. He says that he had not been able to obtain any evidence of a spontaneous activity of any part of the brain, which would give sensations to a person in Laura's condition, resembling those arising from the action of light and sound on ordinary persons. So far as he could discover, her dreams were only the

spontaneous production of sensations similar in kind to those which she experienced when awake. She often related that she had dreamt of talking with persons, but when asked if she had talked with her mouth, her answer always was an emphatic 'No—I dream to talk with fingers.' She never dreamt of seeing people, but only of meeting and touching them in the way she did when awake. This is briefly what we learn from Dr. Howe. There is perhaps more looseness when her dreams are spoken of by her governesses, in the account of her life and education by Mrs. Lamson, but their records nevertheless leave the matter substantially where Dr. Howe leaves it. Mrs. Lamson says that she dreamed of her mother and baby sister, and talked with her fingers to them, but could not give particulars of her dream satisfactorily. In one dream she said that she thought she *felt* some one walking, and when asked if she had heard the person walking, she corrected and said 'felt.' She never had dreams of seeing with her eyes or hearing with her ears. In sleep, as when awake, she depended on touch.

(39) Professor Jastrow also discusses the case of Laura Bridgman, and he is aided in this by an unpublished manuscript on the subject by Dr. G. S. Stanley, which came into his possession. In this account it is said that 'sight and hearing were as absent from her dreams as they were from the dark and silent world, which alone she knew. The tactual-motor sensations, by which she communicated with her fellow-beings, and through which almost all her intellectual food reached her, also formed the

mainstay in her dreams.' It is further said that 'Her sleep *seems never undisturbed by dreams*; again and again she would suddenly and rapidly talk a few words or letters with her fingers'; 'all the people who enter into her dreams talk with their fingers.' She is reported to have said with regard to her dreams: 'I always forget my dreams very soon'; 'I dream many things, but do not remember what I really dream'; 'I do not dream to talk with mouth—I dream to talk with fingers.'

(40) There is ample evidence in the accounts which we possess regarding these two deaf and blind ladies, that their dreams are not mere echoes, and that they are as largely made up of useless inventions and creations as are the dreams of those who can see and hear.

(41) Jastrow's research in regard to those who are only blind is interesting and suggestive. As I understand the results, they may be thus summarised. If the eye is fully employed in sending impressions to the sight centres of the brain, and so in a certain sense feeding and developing them, and if this begins with the early building up of these centres, and is continued for a certain length of time, then, even though blindness comes on and there is no more stimulation of the sight centres through the eye, a sort of mental possession of sight may continue. In other words, the sight centres, when well started normally, appear to hold on to something, which has been acquired by use, after all normal stimulation has ceased. The evidence of this seems to be found in dream life.

Persons who have become blind before the age of five do not, in their dreams, meet images which are seemingly derived from sight: in other words, they do not appear to *see* in their dreams or to have visual hallucinations. They are assumed to be in the position of persons born blind, and in connection with this it is pointed out that the age of five is the earliest age at which *we remember ourselves*—an opinion which many will refuse to accept as correct, grounding the refusal on personal experience, not always of much value. Persons, on the other hand, who become blind after the age of seven, are said to have *dream visions*, or what may be called the faculty of seeing in dreams. The age from five to seven is called the critical age. This I think is briefly the outcome of Jastrow's recent research, but, as he points out, he was to some extent anticipated by Heermann in 1838, who reached conclusions almost the same. According to him, persons becoming blind at an age appreciably above seven years may continue to have dream visions for a long time—it may be till death, even though *post mortem* examination may then show 'degeneration of the optic nerves.' But I think it is commonly held, if total blindness has lasted for twenty years or thereby, though it may have come on after the age of seven, that visual dream hallucinations become few or altogether cease. It has been said broadly that dreams continue to be those of the seeing life, but why the seeing life before the age of five should count for nothing does not seem to have been explained.

(42) It is generally accepted that, in the cases of

persons who are blind, or deaf, or both blind and deaf, dreaming of a character which is remembered—vivid dreaming—is less common than in normal persons. This may, perhaps, be true, but it does not apply to all individuals. There are persons with sight and hearing, who appear to dream less vividly than the blind or deaf—much of the difference, whichever way it goes, depending on the constitutional quality and the culture of the mental powers in the individual.

(43) It is broadly correct that the dreams of those who are both blind and deaf are made up of tactual sensations, but, if an inquirer presses for a multitude of dream stories to be used in illustration, he will certainly find what appear to be exceptions—due probably to imperfections in the narratives.

(44) This short study of dreams appears to me to lead to the following opinions:—

(a) That there is no such thing as dreamless sleep.

(b) That thinking is involuntary—to the extent at least that we cannot cease to think under any order of the will.

(c) That thinking has various characters, these being mainly due to the amount of control and direction exercised over it by the will.

(d) That, in addition, there are different qualities of thinking, depending on the original constitution or the existing state of health of each individual.

(e) That thinking never ceases during life, and is essential to the continuance of life.

(f) That dream-thinking is uncontrolled and un-

directed by the will, is never coherent and concentrated, is more or less of the same character as thinking in delirium, and constitutes a state of mental disorder, which is not a state of disease.

(*g*) That thinking, when awake, is always to some extent under control of the will, by which it is directed to a subject and kept there.

(*h*) That there are many degrees of sleep and wakefulness, and as many degrees of efficiency in the controlling and directing power of the will.

(*i*) That thinking, like breathing or the beating of the heart, does not cause a sense of weariness, though all three, of course, have a wearing out effect on all the organs concerned.

(*j*) That the will's inhibiting and directing work brings fatigue and a demand for rest.

(*k*) That the will finds this rest and refreshment in sleep.

(*l*) That the frequent occurrence of a state of disordered mind occurring in sleep does not do us harm, but on the contrary does us good.

(*m*) That both in dream-thinking and delirious-thinking the moral faculty is in abeyance.

(45) In the particular branch of research to which this study belongs, absolute proof can seldom be reached. But absolute proof is often as fully absent from other branches of biological research, though its absence may not be always frankly avowed. To a large extent, indeed, in all such studies we have to be content with showing probability. It is not doubted by any one that in the affairs and conduct of life probability is often a safe guide. In like manner it may

often be a safe guide in scientific work, so long as its character is kept in sight and it is not allowed to present itself as certainty. In medicine it is largely accepted as a safe guide. Indeed the value of a well worked out probability is never small. Certainty may never emerge from the study of it. But a probability may be so strong as to be properly accepted as a certainty, so far as guidance is concerned when action has to follow, and even in its bearing on the study of related matters.

LAUGHING

LAUGHING

(1) THE physical phenomena of laughter are not easily described, chiefly for the reasons that there is so much tumult in them, and that they are so widespread. It is not necessary, however, for my purpose to attempt any minute description. It will be sufficient if I show their character broadly.

They may be said to consist of a succession of convulsive movements effected by the combined action of the muscles of inspiration, expiration, and voice, causing a remarkable commotion, and giving the whole body special aspects and attitudes. The vocal cords are brought together and separated in rapid dancing fashion, as Dr. Wyllie explained to me, with explosive, reiterated, and differently modulated sounds as the result. In the opinion of many the diaphragm is the muscle primarily affected. In a broad fashion this is a description of the phenomena of voiced or audible laughter.

Sir Charles Bell gives his picture of the phenomena thus : ‘Observe the condition of a man convulsed with laughter. He draws a full breath, and throws it out in short, interrupted, and audible exhalations. The muscles of the throat, neck, and chest are agitated ; the diaphragm is especially convulsed. He holds his sides, and from the violent agitation he is incapable of a voluntary act.’ Every feature of his face is wrinkled and contorted.

Speaking roughly, these are the physical phenomena of sonorous or audible laughter. They are seated mainly in the trunk of the body, but they are always accompanied by a commotion of the muscles of the face, especially of those of the lips and mouth. The features are broadened or stretched out from the middle line, and there is a transverse stretching of the mouth, which is nearly always kept more or less open.

In this sonorous laughter the commotion of the muscles of the trunk is invariably attended by a commotion of the muscles of the face, but the commotion of the facial muscles may occur alone, without accompanying respiratory and vocal phenomena, and it then constitutes silent laughter or smiling, which is largely an affair of the physiognomy. But this silent laughter must not be regarded as loud laughter aborted. It is neither the beginning nor the end of voiced laughter. It is one part of laughter, and it may occur without the other part. It differs from voiced laughter, not in kind, but only in degree. The smile is always present in voiced laughter, but there may be smiling without sonorous laughing. Laughter, as distinguished from smiling, is sonorous, and in its production the muscles of inspiration, expiration, and voice are in tumult. Smiling, on the other hand, is silent, resides in the face, and depends on the agitation of its very numerous muscles.

Wyllie says that the emotions find their natural expression in the language of vocal tone, facial aspect, and bodily gesture. Whatever emotion voiced laughter expresses appears to need all three, and, if silent laughter expresses the same emotion, then the muscles of the face alone are sufficient for its expres-

sion, without the aid of vocal tone or bodily gesture. We thus have two ways, fairly well differentiated, of expressing the same emotion or the same mental state.

(2) The physical phenomena of sonorous laughter are accepted as the bodily expression of a particular mental state, and it is a very remarkable thing that any particular mental state should be expressed by such a widespread muscular commotion and tumult. It becomes still more remarkable in view of the fact that laughter, having the same physical phenomena, may occur, which we cannot regard as having its origin in any special state of mind, that is, as starting from any mental feeling or emotion. Laughter of this kind is excited by what is clearly physical in its character, and it is almost always voiced, though sometimes it may not go beyond silent smiling. It is produced by what we call tickling, that is, by bringing the fingers, or some other thing that is suitable, into light contact with certain parts of the skin, passing quickly from one spot of it to another. The laughter which follows tickling is not the expression of a mental state coincident with, or antecedent to, the act of tickling. It is induced by a physical operation.

(3) We thus appear to have two laughs, which are widely differentiated from each other by the nature of that which seems to cause them, but which do not differ at all in the physical phenomena which attend them. Both exhibit the same muscular perturbation of the trunk and face, the same sonorous-

ness, and the same gesticulations and attitudinising, and nothing of all this, in either kind of laughter, comes into existence by an order of the will. It is altogether involuntary. It has not been acquired. It presents itself as instinctive. We do not learn to laugh. We do it by inheritance.

We go through the same odd and ridiculous actions, out of all proportion to their cause, whether that cause be a special state of mind or the mechanical tickling of the armpit. The performance seems as purposeless as it is strange—its extent, violence, and grotesqueness making it very remarkable.

(4) Referring to that kind of laughter which appears to be the expression of a mental state, and accepting it as largely, if not entirely, beyond control, let us suppose that a fit of such laughter, instead of being of quite short duration, as is usually the case, should last for a day, or days, or longer, then the state of mind which it expresses would be of a corresponding duration, unless we suppose that the expression outlives the thing expressed. In such a case I venture to say that it would be difficult to say that the person thus persistently and uncontrollably laughing was not in a state of mental disorder—keeping always in view the singular and irrational character of the phenomena of laughter. When this prolonged laughter had ceased, I think we should be justified in calling what had happened a transitory fit of mental disorder.

(5) Then I advance a step and say, that if it would

be correct to say this in regard to a fit of laughter which had lasted for a considerable time, it follows that it would also be correct to say it in regard to a fit which had lasted only for moments or minutes. Scientifically the fits are the same. Duration only has varied.

(6) If I am right, this would practically mean that there may be a frequent occurrence of short periods of mental disorder, which are not accepted as having any bad effect. On the contrary, their effect is believed to be good, and it is so regarded, even when the laughter is boisterous and immoderate.

(7) But is it possible—is it conceivable—that there can be a state of mental disorder, which occurs often in short transient attacks, and which does good and not harm?

In dream-thinking, which is of the nature of delirium, I have already endeavoured to show that something of this kind is possible and does occur. I do not see how we can escape from that conclusion as regards dreaming. Laughing may show mental disorder somewhat less clearly, yet I am surely right in thinking that sonorous, convulsive, uncontrollable laughter, as we see and hear it, has at least the look of a manifestation of disordered mental action; and when I add that it is certain that no one can think or speak coherently or rationally during its actual continuance, the semblance passes into reality. There is no disease about that reality, and therefore we are not hurt. So it comes, as I see the matter, that the mind may at times act passingly in certain disordered

fashions, which are not pathological, which are without injury and probably beneficial. If I am right in this, it seems to follow that it is not an advantage to be always quite sane. Beyond question we get strength of mind from dreaming, which is mental disorder, and nearly as much beyond question we get strength of mind from laughing, which is almost as clearly a state of mental disorder.

(8) I turn to speak of the kind of laughter which is excited by touching certain parts of the body in a certain way. The touch must be light, and must pass quickly from one spot to another. Steady pressure or firm rubbing does not tickle, and does not cause laughter. Some persons are more easily tickled than others, so much so that even approaching them with an apparent intention to tickle causes them to laugh, and this is a curious fact in the study of the subject, since it seems to show that laughter from tickling can occur without any actual tickling. There is another curious fact which presents itself in the study of this kind of laughter, namely that persons, young and old, are often unable to tickle themselves, and never can do it so readily as it can be done by others. Still another curious thing arises from the absence of any satisfactory explanation of what gives the peculiar sensibility to the parts of the skin which can be most easily tickled. These parts are the soles of the feet, the armpits, the front of the neck, the legs just above the knees, the nostrils, and the entrance to the ears. They are thus widely spread over the body, and are not in any special or clear manner related to each other.

(9) The boy who laughs, on seeing or hearing something ludicrous, does so as the expression of a certain state of mind, which is excited through the eye or the ear. The same boy's laughter as he reads *Harry Lorrequer*, when nothing reaches his brain through these organs of sense, has exactly the same origin, for he is practically hearing Lever speak and seeing what Lever describes.

The mental feelings which lead to laughter usually come through sight or hearing. They may come, however, though very rarely, through taste, smell, or touch. I think it has been well established that they may possibly come through any of the senses.

The mental feelings referred to are commonly believed to be pleasant. The laughter which they provoke is regarded as the expression of a joyous and merry state of mind.

(10) The continuance of this kind of laughter is desired. It ought naturally to be so, if the view as to its being an expression of mental pleasure is correct. It is quite different with the laughter caused by tickling. Every one who is being tickled desires to put a stop to it, and does so if he can. No one invites tickling, or wishes it to be continued. It makes him laugh, but he does not enjoy the laughter, nor does he wish it to continue.

(11) But the laughter of a boy who is being tickled has the same physical characters as that of a boy who is reading *Huckleberry Finn*. If the laughter is heard from a room adjoining that in which the boy is, it cannot be told whether his feet are being tickled,

or he is listening to Mark Twain's comic talk, or looking at the funny scenes which that talk pictures.

(12) If there are two boys in the same room, one of them having his feet tickled and the other reading this amusing boy's-book, and both laughing noisily and heartily, one great difference between the two will be apparent. The boy whose feet are being tickled will be seen struggling to get free of the tickling, while the boy who is reading the funny story-book will go on reading, and court a continuance of the laughter which it provokes.

The physical phenomena of both laughs, however, will be the same. Both may be loud and tumultuous, and both have been fairly well described as 'convulsive merriment.'

(13) But it may reasonably be asked whether there can be any true merriment in what one of the boys so resolutely struggles to prevent. Is there any real pleasure, which we wish neither to experience nor to prolong? Yet if the two laughs express different mental states, then two different, if not opposite, states of mind would be expressed in exactly the same way, and that way remarkable and emphatic. Again, if the laughter from tickling is not the expression of any particular state of mind, but is a mere reflex, then the bodily expression of a state of mind—usually regarded as a joyous state—would be the very same as the outcome of an ordinary pain-giving reflex, though the phenomena are almost startling in their character and complexity.

(14) This at any rate seems certain—they are not in either case the product of disease, as we use the word. There is nothing pathological about them. They are physiological in their nature. But they are so strange, irrational, and disorderly as to be readily and properly taken as manifestations of disordered mind. Loud boisterous laughter with its purposeless movements—the dancing about, the clapping of hands, the stamping with the feet, and the shouting—it is difficult to regard all this as a manifestation of sober sanity. And in all I have said I have not so regarded it. I am treating it as an indication of a certain transient condition of mental disorder, which has about it no trace of disease. Man wants to laugh—he greatly desires it—he spends large sums of money in the purchase of laughter, and he is conscious of its doing him good. If it represents fits of *unreason*, he feels that he comes out of those fits into a stronger reason, and he laughs at those who counsel him not to laugh, as he does at those who counsel him not to sleep and dream.

(15) I have endeavoured to show that dream-thinking may correctly be regarded as a state of mental disorder—a form of delirious thinking, which is physiological and not pathological, and which is beneficial to the mental health. We may as correctly advise men to avoid sleep, as to avoid laughter. It is during sleep that dreams occur, but no one doubts that sleep yields health of mind and body, and laughter I think has been as rightly called ‘a promoter of sanity.’ Yet, in my opinion, dreaming and

laughing both appear to be states of passing mental disorder.

(16) To bring this view under consideration is my chief object, and I might stop here. But I think I can usefully go further, and state various things about laughter, which, by more fully disclosing its curious and complex character, may give support to the opinion.

(17) It is frequently said that man is the only animal that laughs. Emerson puts this common belief prettily when he says: 'A taste for fun is all but universal in our species, which is the only joker in nature.' So far as is yet known, it is true that no other animal laughs exactly as man usually does. It is necessary to say as man *usually* does, because men, women, and children laugh differently, and the laughter of one race is not the same as that of another race. These differences are considerable, yet the laughter of all of them has a complete sameness in essentials.

The reiteration that takes place in the sounds attending laughter may be regarded as of the nature of an essential, and this reiteration Darwin saw in the tittering of monkeys, as the expression of pleasurable feelings. He also says that the anthropoid apes utter a reiterated sound, corresponding with the laughter of man, when they are tickled, especially under the armpits. Why the laughter of man and its analogue the tittering of monkeys should be a rapidly reiterated sound, we do not know. When the armpits of the Chimpanzee are tickled, there follows a chuckling or

laughing sound, with a wrinkling of the face. So Darwin says, and he says also that, if the Orang is tickled, it grins and makes a chuckling sound, and when that ceases the expression of the face has been held to resemble in some degree that of smiling in man. The muscles of the jaws and lips are chiefly affected in the Baboon and other monkeys in what has been regarded as their laughter, but in man the muscles chiefly affected are those of the chest. No peals of loud laughter, with rapid and violent spasmodic expirations and inspirations, have been observed in the apes or in any other animal. The apes appear to show what may be considered an imperfect laughter, but no fully formed and fully voiced laughter occurs among them. Perhaps what has been seen to occur in the apes may be properly accepted as their form of man's laughter. It has been objected that Darwin sometimes saw what he desired to see, but no weight can here attach to this objection. The different races of man, all over the world, express their emotions and feelings with remarkable uniformity, and there is no uncertainty or hesitation in saying that all of them laugh. There are differences in their laughter, but all the essentials are present, and they always constitute unmistakable *laughter*—beyond doubt or question. But as regards the movements, which in apes seem to answer to the laughter of man and to resemble it, there is difficulty in showing in what the resemblance to man's laughter consists, and that there is no straining of the evidence. A man, who chuckled or tittered like a monkey, could scarcely be said to be laughing; nevertheless this tittering may be the monkey's way of laughing, and may

represent nothing more than a great increase of the difference that exists between the laughter of one man or one race of men, and that of another man or another race.

Except as regards the apes or monkeys, no serious effort, so far as I am aware, has been made to show that other animals, either wild or domesticated, express pleasurable feelings by movements and sounds which can be regarded as representing, or as analogous to, the voiced convulsive laughter of man, and we may therefore conclude that, if they do so, it must be in a very obscure manner. Though I say this, I shall afterwards have to state that many believe that dogs have the power both to laugh and joke.

(18) Without definitely holding that man is the only animal that laughs, it may be confidently said that he is the only animal that has bursts of loud laughter, with reiterated sounds, and extensive commotion of the muscles of the chest and face; that possibly the anthropoid apes have both a voiced and silent laughter, somewhat resembling, but at the same time greatly differing from, the laughter and smile of man; and that no other animal shows anything which can be properly accepted as either sonorous or silent laughter—unless it be the dog, to which reference will be made. With these qualifications man may, perhaps, be correctly enough spoken of as the only animal that laughs.

But man has a much less exclusive possession of laughter than he has of blushing. Indeed, of all the expressions of emotion or feeling, blushing, I think,

has been correctly described as the most strictly human. The beasts may, perhaps, join man at a great distance in laughing, but as yet we have no reason to think that any of them can join him even *distantly* in blushing.

(19) Man's erect position, with the alleged consequent special place of the diaphragm in relation to the heart, can but very lamely account for his being the only animal that laughs. I do not think that the opinion merits consideration. Nor is it better accounted for by his possession of reason, for it is scarcely possible to hold that reason is the mother or begetter of laughter, since (1) there is so much laughter which reason condemns or of which at least it cannot approve, (2) since the young in whom reason is not ripe laugh most, and since (3) there occurs a laughter—that from tickling—in which reason plays no part.

(20) I have lately had frequent interviews with a young smooth-haired retriever. When he is lying half asleep beside me, I often lightly touch the tuft of hair between the pad and the toes of a hind foot. This is always followed by a sudden and forcible retraction and extension of his leg. If I repeat and repeat the touching, the same thing happens, but he then gets up, and stretches himself out for another sleep at some distance from me, evidently in order to avoid what he finds disagreeable.

The same thing happens if I lightly touch the hair between the pad and toes of a fore foot, but in that case the jerk or kick is much less forcible.

A rough-haired Aberdeen terrier, when I treat him in the same way, gives the same kicks—perhaps less vigorously—and, as he hails from Aberdeen, he gets sooner out of the way of a repetition.

Something of a like kind happens, I believe, in the case of all dogs, though many persons seem ignorant of the fact. Mr. Charles Cook, an authority on matters relating to the habits and character of dogs, writes me that he has ‘often experimented’ in the way just described, and he gives the following as his general conclusion: ‘If the hair between the pads of the toes of the hind foot be tickled, the dog’s leg at once responds by spasmodic kicks.’ He adds that ‘if the fore feet are tickled, the dog shows discomfort by withdrawing the foot, but I have not noticed the same spasmodic action in the fore legs as in the hind legs,’ and with reference to this he says that he fancies that ‘humans’ are in this respect the same as dogs, namely, that they are more ‘tickly’ on the soles of their feet (their hind legs) than on the palms of their hands (their fore legs).

I have not been able to detect that these jerks in dogs are accompanied by any action either of the muscles of the face or of those of respiration. The jerks appear to be uncomplicated reflexes. Mr. Cook confirms this. He says that, so far as he has been able to make out, dogs never smile when thus tickled—they only show signs of discomfort.

The tickling of the sole of the foot of a quite young child seems to be exactly of the same character. Neither laughter nor smiling attends it. Darwin writes: ‘I touched with a bit of paper the sole of the foot of one of my infants, when only seven

days old, and it was suddenly jerked away, and the toes curled about,' and he regarded it as manifestly a simple reflex action.

(21) Mr. Cook says: 'I have never tied a dog up, and continued to tickle him—I never will—and so I cannot say what he would do in such circumstances, but I am sure he would act similarly to a man (persistently tickled), namely, he would first whine (protest and implore), then growl (swear), and finally howl (in agony).'

It has been very frequently alleged that the prolonged tickling of children has done serious harm, and cases in illustration could be easily adduced. The evidence of its having been carried so far in young adults as to cause permanent injury is not so clear, but there is no reason to doubt that such may be the case. I give one instance. A gentleman, thirty-one years old, recently consulted Dr. Graham-Brown for heart trouble—dilatation and irritability—which he—the patient—attributed to a tickling of the axillæ and the sides of the thorax, when his age was twenty-five, which was so prolonged as to make him practically speechless—unable even to beg that the tickling should be discontinued. Almost immediately thereafter, and more or less at intervals from that time down to the present time, the action of his heart has given him distress, and Dr. Graham-Brown thinks it probable that his patient is right as to the origin of the mischief.

(22) This simple reflex in a dog—best seen if he is young—appears to be on all fours with what happens

to a very young child when the sole of its foot is tickled. The 'jerking away' follows in both, and in both no laughter or smiling follows. In the case of the child, however, when it grows older, but while it is still young, a difference appears. It still jerks its foot away, but there also occurs a commotion of the muscles of the face, with something like a smile. As it grows still older, voiced laughter follows the tickling. In the dog the thing appears to stop at the spasmodic jerk. In the child it passes on to something more. If the two things, in the dog and the infant, are at their beginning the same, it may be held to mean that dogs thus show the starting-point of laughter from tickling, which never gets in them beyond that point; yet, to that small extent, they may be said to exhibit the faculty of laughing.

(23) Firm pressure on the foot of the dog has not the effect of light touching or tickling. When firm pressure is made on the hair between the pads no jerk follows. The dog walks on its feet—puts the whole of its weight on them—and no jerk follows. So also it is with man, from the earliest age all through life. He can have the soles of his feet pressed firmly by the palm of another's hand without any tickling, or any tendency to a jerk or to laughter. He walks on his feet, and nothing of this kind takes place.

There is another point worthy of notice. The dog licks his feet without causing the jerk, though in the lick some of the touching must be light and the seeming equivalent of tickling. It appears as if he could not do to himself what is needed to produce the jerk. So it is also with infants. They can touch

their own feet, often quite lightly, with none of the results of tickling as the sequence. Indeed, all through life man can scarcely tickle himself, even though he tries to do it in suitable ways. This at least is quite certain—he cannot tickle himself so readily as he can be tickled by others. The explanation and significance of this fact are not on the surface.

(24) All that has been said is in the direction of showing that the dog does not smile or laugh in any full sense. Its natural intelligence, very long domestication, and intimate association with and great love of man, might conceivably have given such power to *imitation*, as to have evolved or created in the dog a faculty, which was not an inherent possession. But so far as my observations go, nothing of this kind has taken place, even to a small extent. Yet I am often assured that dogs both smile and joke. Sonorous laughter, however, is never claimed for them. Mr. Charles Cook, whose opinions on such a subject have great weight, writes me as follows: ‘Most certainly I have seen dogs smile. They often, when pleased or amused, express their feelings by smiling. It is difficult, however, to describe the smile of the dog, which, although broad, and often involving a show of teeth, does not in the least resemble the snarl of anger. Usually the smile is one-sided, namely on one side of the face only, and might perhaps be more aptly described as a grin. The dog’s eyes in their expression reflect the smile. My present retriever dog always welcomes my return after an absence with a smile as he gambols round me.

Another old *friend*, alas now gone over to the majority, not only smiled voluntarily when pleased, but did so when told to "laugh." Another, a dandie, was a great humorist and smiler, notwithstanding that he took life seriously.' Mr. Cook is clear as to dogs having a decided sense of humour, and as to their thoroughly enjoying a joke.

The late Miss Frances Power Cobbe, a great lover of dogs (as of all animals), and a student of their ways, wrote me that she has had many dogs which smiled, 'their mouths decidedly opening into smiles or wide grinning.' She adds, with severity as regards man: 'Of course, of the bitter, sarcastic smiles and laughter of men, which mean a sense of superiority, the poor dog knows nothing.'

About the dog's ability to joke himself and to enjoy the jokes of men, I have countless assurances from persons who are good observers in other matters, but I have never been able to see the thing myself.

My difficulty is in finding evidence that the physical phenomena of the so-called smile of the dog are sufficiently related to those of man's smile to render them in a proper sense modifications of the same thing. I have no difficulty in accepting the view that dogs express feelings of pleasure in a recognisable manner and chiefly in the face, and that in that sense there exists a dog's smile, not so capable of description as man's smile, but still quite easily recognised and understood—nearly as much so as his expression of anger.

I often meet a high-bred collie that smiles when asked to do so. He was observed to separate his

lips, stretch them transversely, and slightly open his mouth, in order, as was thought, to express his pleasure at receiving a biscuit, and he was easily taught to repeat the movements on the offer of another biscuit. These actions of the facial muscles have some slight resemblance to the actions of these muscles in man's smile. I have had frequent opportunities of examining them carefully, and they no doubt always coincide with a pleasant state of the dog's mind. He is always happy when he *thus smiles*, but there does not seem to me to be anything *involuntary* about the movements. He calls them into play. And if this is correct, it constitutes a radical difference. The results of the facial changes might of course be as correctly called a grimace as a smile, but that would prove nothing, for man's smiling has often been called grimacing, and at times it can be ugly.

(25) It is a question of some interest whether children laugh from tickling before they laugh from pleasant mental feelings, and whether their earliest laughter is from neither of these causes, but is merely an imitation of the laughter and smiling of those around them, who no doubt laugh much and often, generally in the hope of giving pleasure, but sometimes, it has been said, 'out of vanity at the thought of being parents.'

If laughter from tickling in early childhood precedes laughter from a pleasant state of mind, then it seems to follow that the strange physical phenomena of laughter may first appear as an expression of such doubtful pleasure as is experienced in tickling—

almost as an expression of what is painful. And it may only afterwards, at a more advanced age, appear as the expression of a real, and generally pleasant, state of mind.

Probably the first pleasure which an infant feels amounts only to the absence of pain—a sense of general wellbeing—a happiness because there is no unhappiness. The mere being alive and in perfect health may at times bring this kind of pleasure to young adults—to those, for example, who are coming back rapidly to health during recovery from such a disease as typhus fever. Perhaps I have chosen too telling an illustration, for the sense of pleasure during such a recovery is more active than that which merely arises from feeling quite well and free from all discomfort—it may go far beyond the narrow view which makes all pleasure consist in the mere absence of pain. In the pleasure experienced during recovery from typhus, there is not only the sense of *well-being*, but the sense of *healthy growing*. And this makes it quite comparable with the pleasure which infants probably experience, when they are quite well and growing in a healthy manner with rapidity. How early their feelings of pleasure get beyond this, and involve ideas, has not yet been satisfactorily determined.

If the first smile of the child is due to imitation, then important mental work, which imitation involves, must begin very early, so early as to support the view that we are born *with reason at work*—that is, from our very start in a separate life. There are no serious difficulties in the way of accepting this view.

(26) It is of importance to realise that every person has both a laughter and a smile proper and peculiar to himself. In like manner races of men laugh and smile each in its own fashion, and the range of the difference is considerable. The laughter of a woman can generally be distinguished from that of a man, and the laughter of children is characteristic. All this, I think, is what we would expect, and it has no important significance. Nearly the same thing could be said of the voice apart from laughter. Perhaps we could even say it of yawning and sneezing. In the sonorousness of the laughter of men the vowels *a* and *o* are thought to prevail, and *e* and *i* in the sonorousness of the laughter of women. Laughter may be tumultuous, loud, vehement, and explosive, with much grimacing and gesticulation. On the other hand there is a laughter which is comparatively quiet, low-voiced, subdued, and even gracious. Between these two kinds all gradations occur. But they are all mere varieties—forms of the same thing. They all bear the same name. They are all called laughter without any hesitation, and the physical phenomena are essentially identical.

Professor Wyllie tells me that he thinks the laughter of the negro very characteristic, and another good observer tells me that there are twenty of his friends and more with a special laughter which he easily recognises; that is, he knows by the laughter who is laughing.

There is not only a difference in the forms of laughter, both in individuals and in races, but there is a difference also in the things which cause

laughter. As regards individuals this is so great, that in Goethe's opinion men show their character by nothing more clearly than by what they consider 'laughable.'

(27) I have not yet given any definite name to the particular state of mind which has its expression in laughter. It is commonly regarded as a joyous and merry state. But other and very different states of mind give rise to laughter. From some of them, indeed, everything of the nature of joy or merriment is either wholly absent or is very obscurely present.

(28) A consideration of the causes of laughter is an extremely complex subject, because they are so numerous and so different in their nature, and they cannot be disclosed, in my opinion, by any direct and separate discussion of each alleged cause. Their number, nature, and variety can, I think, be best shown by treating the subject as a whole.

(29) Perhaps the commonest cause of laughter, as Darwin says, is the perception of 'something incongruous, exciting surprise and some sense of superiority in the laughter.' This cannot, however, be accepted as unalloyed joyousness. Indeed, the pleasantness so caused must often be of a character which should make us unwilling to acknowledge that we had felt it, and perhaps make us ashamed.

(30) The causes of laughter are not the same in childhood and in adult life. Many of the things that bring laughter to a boy or girl have no such effect on

adults. This is true, however, of the other expressions of mental states. For instance, bodily pain excites children to cry and weep, but weeping with adults is 'almost confined to mental distress.' Children, however, must be some months old—three or four at least—before pain brings tears. They *cry* when in pain at an earlier age. Indeed they *cry* or *scream*, probably from pain or discomfort, immediately after birth, to their advantage, but no tears follow *crying* till they are about three or four months old, after which time crying and weeping, in child life, become interchangeable words.

It is true of all expressions of emotion or mental feeling that they change with age, and that some of them altogether cease to be manifested in late life. We may reach an age when we are no longer able to join in laughter, but we should make an effort to carry youth in this matter, and in many others, as far as possible into advancing years. I say this, notwithstanding the opinion I have expressed as to the cousinship between laughter and insanity, because I have regarded such insanity as only a *healthy dishealth* of the mind.

(31) Laughter may be, at its root and in the main, an expression of joy and happiness. It is certainly so spoken of by the multitude. But it also expresses other states of mind. If these other states contain any form of happiness, we seldom speak of that form with respect. What I desire here to emphasise is that very different states of mind are expressed by laughter. So that, if it be a puzzle why the muscles of the chest and face should involuntarily and instinc-

tively go into convulsions to express a happy and joyous state of mind, the puzzle is deepened, when it is found that the very same muscular commotion may be the expression of scorn, vanity, or superciliousness.

It is possible, of course, that the physical phenomena may not in all kinds of laughter be identical. The differences may not be easily seen. Nevertheless they may exist. Indeed, it has been asserted that the *sounds* of the laughs of joy, scorn, contempt, and vanity can be distinguished from each other. And it is also conceivable that the *muscular commotion* in laughter from one cause may not be exactly the same as that in laughter from another cause, but as yet no one has attempted to give a description of such differences. Their existence rests on loose assertion, yet it is possible that they exist.

There is one thing, however, which renders their existence improbable, namely, the fact that both the convulsive movements and the sounds which attend laughter from tickling are beyond question the same as those which attend laughter from known pleasant mental feelings. Yet the causes of these two laughs may be said to be as wide as the poles asunder. It does not bring the two into closeness to call the first a tickling of the mind. To do so may be a pretty conceit, but it is nothing more.

The whole subject presents itself as a set of puzzles within puzzles. Why such irrational, senseless, and purposeless movements and sounds should express a state of joy or any other special mental feeling passes comprehension. It puts the matter into a deeper darkness when we find the very same

phenomena produced by mechanically tickling the armpit or the sole of the foot.

Common-sense can scarcely fail to pronounce the man, who, from any cause, is laughing boisterously, to be a ridiculous object, behaving irrationally. He utters sounds without meaning, throws himself into contortions without purpose, and expands and wrinkles his face till he is barely recognisable. He is acting insanely—and it does not affect this view of his conduct and condition to say that he is the better and not the worse for it.

(32) It is quite necessary to remember that any idea or scene, in order to be ludicrous, must not be of grave import. It must not be of a momentous nature. There must be no appearance in it of *danger* or great suffering. Over things of great importance joy is always silent. Neither laughing nor smiling follows. ‘No poor man would laugh or smile on suddenly hearing that a large fortune had been bequeathed to him.’ His heart might be full of joy, but that would not be expressed by laughter. There are joys that are even solemnising, and we are never graver than when experiencing the highest pleasure we know. Great happiness never manifests itself by a burst of laughter, and the highest enjoyment of wit has no recognised bodily sign.

It is scarcely possible, indeed, to imagine a great joy expressing itself in audible laughter, or even in the unvoiced smile. Indeed, we naturally think of great joy as silent. Even the pleasant gladdening feelings of the mind, say on the receipt of good news about

one who is dear to us and who has been in peril, are quiet and restrained. The face may be radiant with happiness—may be all aglow from the thrill the good news has caused—but there are none of the foldings and commotions which constitute smiling. The same thing extends to tickling. I have pointed out that it is quite necessary that the touch be light. We cannot be tickled by blows—not even by firm pressure.

(33) In a study of the general causes of laughter, the causes of the laughter of children become instructive. I do not refer to infants, but to children of seven or eight, who laugh so often and so much.

In the *Century Magazine* (1902) Katherine A. Chandler tells of the efforts of a teacher in a large Primary Public School of America to discover what provoked mirth and laughter in her pupils between the ages of eight and fifteen. The conclusion to which general observation had previously led her was that the 'mortification, or discomfort, or hoaxing of others' very readily caused laughter, while a witty or funny remark often passed unnoticed. But she put her loosely formed general conclusion to an ingeniously devised test. A week after a time of holiday she asked all grades of her pupils between the ages of eight and fifteen, as a regular language exercise, 'to describe the best joke heard during vacation.' The children of eight, without exception, described some action, in which they had personally participated, embodying the idea of discomfort to somebody. The other pupils, as they rose in age, described with some frequency jokes which were less personal, and in

which the discomfort of others did not appear. But the boys, up to the highest age, namely fifteen, continued with frequency to find their good jokes in having done something which made their sisters or other girls look ridiculous. Punning, Irish bulls, and the odd sayings of quite young children turned up, but only occasionally, in the jokes described by the oldest of the pupils.

(34) This interesting American experiment reveals a truth about laughter. Young persons readily discover what is comic in the misfortunes and discomfort of others. The first jokes which strike children relate largely to the upset of personal dignity, or to mishaps of some kind to others. But laughter with this origin is also far from uncommon in adult life, and all of us have frequently occasion to be ashamed of it. The following may be given as an illustration. A short, bald-headed, oldish man has his well-groomed silk hat blown off his head on a day of rain and wind. It goes careering along a slushy street, and the owner starts in pursuit. It halts for a moment, and his hand all but catches it, when a fresh gust sends it on over the wet road. All the passers-by, men and women, young, middle-aged, and old, stop to witness and enjoy the fun, and when the hat *jinks* him, if I may use such a word, as he almost catches it, there is loud laughing all round. But there is not a trace of smiling on the man's own face. He is conscious that he is cutting a ridiculous figure. He knows that the crowd of onlookers have no thought of pity for him. Indeed he is assured of this by their voiced laughter.

(35) Laughing at the discomfort of others therefore by no means belongs exclusively to children. It has been correctly said that scarcely any grown-up person can boast that it is wholly absent from his own experience. It is the *schadenfreude* of the German tongue—pleasure in the pain of others—*malignant joy*, as Hilpert translates the word. It is pleasant to know that few languages have a word to name it, but the thing exists everywhere. Among all the peoples of the earth, the sight of discomfort in others may in certain circumstances provoke laughter,—may provoke that which we ordinarily regard as the expression of merriment and joy.

But, as has already been pointed out, the discomfort or distress, which does this, must never be grave or serious. Hard pressure on the sole of the foot does not tickle nor cause laughter, and in like manner the sight of suffering, which is great and grave, never presents itself as ludicrous and never incites to laughter. In a railway collision, bringing death to many and agony to many more, there is not a face among those who have escaped injury that is not blanched and solemn. Nothing ludicrous is seen by any one, though much that is really ludicrous may have occurred, and days after may be remembered and laughed over. On the spot—at the time—all that is seen is an appalling disaster.

Aristotle says that the ridiculous is ‘what is out of time and place, *without danger*.’ It is quite necessary that it be *without danger*. There being nothing dangerous—that word covering all that is serious or grave—our sense of the ridiculous may be outwardly expressed in what Emerson describes as ‘the pleasant

spasm we call laughter.' This is a kindly way of describing laughter, to which it is not much accustomed. Even from Emerson's pen, 'the pleasant spasm' elsewhere becomes 'the contemptible squeal of joy.' He makes it 'a rule of manners to avoid all exaggeration,' and he treats loud laughter as such an exaggeration. Explosions of it, he says, should be under strict control, and he quotes Lord Chesterfield as saying: 'I am sure that since I had the use of my reason, no human being has ever heard me laugh.' Such sayings only show the position of doubtful dignity and respectability, which is often assigned to laughter, for reasons which are not difficult to find; but most men will be of opinion that a world full of Chesterfields would be a very sickly world, and that laughing, even though it may not be always quite proper and respectable at its core, improves the use of reason.

Emerson is always gentle in dealing with human frailties, and it is nice to find him thus apologising for the laughter of the crowd at the man in pursuit of his blown-off hat: 'To see a man in a high wind,' he says 'run after his hat is always droll,' but he goes on to say that the drollery consists in seeing the hat becoming master for the moment, and he adds charitably that the 'bystanders cheer the hat.' He warns us against over-laughing, yet he speaks of 'the rest and refreshment we get from the shaking of the sides,' acknowledging that, in some way or other, we do get rest and refreshment from laughter, and that even its 'mad-like antics' do us good.

(36) The greatly differing adjectives applied to

laughter give some indication of its numerous and varied causes. Boisterous, loud, shouting, roaring, ear-splitting, stentorian—convulsive, tumultuous, side-splitting—sneering, mocking, scorning, deriding, scoffing, disdaining, jeering—contemptuous, supercilious, triumphant, conceited, insolent, malicious—grimacing, guffawing, grinning, giggling, tittering, simpering, sniggering, chuckling, cackling,—all these adjectives are in frequent use to qualify either the physical manifestations of laughter, or the state of mind of which these manifestations are accepted as the expression. It will be at once admitted that they do not point to anything dignified in the physical phenomena, nor to anything lovable in the mental state which they express. Rather is it the other way.

(37) The *phrases* or *sayings*, in which laughter appears, have much the same character as the adjectives applied to it. Topsy with laughing, laughing consumedly, the horse-laugh, peals of laughter, the sardonic grin, the dread laugh, laughing in one's sleeve, the 'loud laugh that speaks the vacant mind,' a 'laughing devil in his sneer,' 'the laughter of a fool,' 'laughing, quaffing, and unthinking,' 'they laugh that win,' 'laughter is the hiccup of a fool,' 'the house of laughter makes a house of woe,' 'to laugh at the wagging of a straw,' 'to laugh in one's face and cut his throat'—there is not much in such *phrases* or *sayings* to show that there is anything graceful or becoming in the bodily movements of laughter, or that these movements give expression to a joyful, happy, merry, pleasant, kindly state of mind.

(38) What I have just said refers to sonorous or voiced laughter, but it is scarcely different with the adjectives applied to smiling—the silent laughter confined to the face—or, with the *phrases* in which it appears. It is called insipid, vacant, cold, affected, self-approving, complacent, ghastly, furtive, insidious. Many of the *phrases* relating to it are of a like character. We have ‘the spare diet of a smile,’ the ‘villain with a smiling cheek,’ ‘the vain tribute of a smile,’ ‘one may smile and smile, and be a villain,’ ‘I can smile, and *murther* while I smile,’ ‘the smiler with the knife under his cloak,’ ‘eternal smiles his emptiness betray’; ‘the barren simper,’ ‘the smile of gratified pride.’ It appears, therefore, that smiling like laughing is by no means always spoken of as the pleasant offspring of a pure joyousness without trace of evil or nastiness in its nature.

(39) No doubt there are pleasant adjectives sometimes applied to smiling, such as engaging, winning, loving, genial, happy, friendly, glowing, angelic, seraphic, heavenly; and so also there are many phrases which refer pleasantly to smiling, such as ‘smiles from reason flow,’ ‘that smile we would aspire to,’ ‘the smiles of joy,’ ‘the smile that gives a welcome,’ ‘the smiles of boyhood’s years,’ ‘shot with a woman’s smile.’

(40) It is much more difficult to find altogether pleasant adjectives qualifying audible laughter, or to find it appearing in phrases in a way that makes us think of it as wholly without alloy in its pleasantness. Hobbes makes the essence of laughter to be a sudden

sense of our own superiority, with a chuckling over the absurdities and weaknesses of others.

(41) In these adjectives and phrases the quality, inner character, and sources of laughter are in a manner disclosed, and they as a whole go to show that a joyous state of mind, and nothing more, cannot be present in all laughter and all smiling. It would be safe to go further, and say that something very different from pure joyousness must often be expressed in laughter, or at least be mixed up with that which it expresses. There appears, indeed, to be both a laughing and a smiling from which good feeling is entirely absent, and in which cruelty and meanness may be present.

(42) There are twenty-nine references to laughter in the Old Testament and four in the New. In thirteen instances the laughter referred to is that of scorn, derision, mocking, or contempt :—laughing *at* some one, or *at* some calamity, trial or danger occurs more than once. It is once called madness—‘I said of laughter, it is mad.’ Sarah’s laugh within herself seems to be the same as the laugh in one’s sleeve. It thus appears that the laughter usually spoken of in the Bible is not that which is born of a joyful and merry heart. In only two instances can it be so regarded :—‘Till he fill thy mouth with laughing and thy lips with rejoicing.’ and ‘Then was our mouth filled with laughter, and our tongues with singing.’ The word ‘smile’ does not appear at all in the Bible, and no prophet, saint, or apostle is ever spoken of as laughing.

(43) The inference to be drawn from the way in which laughter is so frequently spoken of is unavoidable, and it seems difficult to hold, as I do, in face of that inference, that there is a laughter which does good. Nevertheless all agree that it does a boy good to 'leap with joy' and 'roar with laughter,' though the leaping and the roaring are altogether unreasonable, and in describing them no one could use such adjectives as *dignified* or *becoming*. All healthy-minded people feel that 'the laughter of girls is among the most delightful sounds of earth.' It tells of the happiness and health of the girls, and it brings happiness to those who hear it. 'Laugh and grow fat' is a well-founded proverb, and I can myself almost believe that there did exist 'a man who lived upon a smile and well it fed him.' It is surely true that the man who has been robbed, and yet can smile, steals something from the thief. Who can doubt the advantage of being able 'to smile in pain'? Carlyle goes the length of holding that 'the man who cannot laugh is only fit for treasons, stratagems, and spoils.' There seems, however, to be a nasty laugh, and I am not quite able to show how that can do the laughter good. But all laughing is not of that character, and beyond all question there is a laughter which does good and should be courted. It does not shake this opinion, as I see things, that during all laughter the mind is in a state of disorder. Dream-thinking and laughter keep step in this peculiarity. It would seem that no one can be, or should be, at all times quite soberly sane. If this be true, then all the puzzles find their solution. There is no mental disorder confined

to the intellect alone. This may seem a strong thing to say, but I think it is true. The moral faculty always participates. There is as much to be ashamed of in dream-thinking as in any sort of laughter. The causes of laughter are a great multitude with little or no coherence, into which the unlovely and the bad have a door of entry—perhaps *necessarily*, because in laughter we have a manifestation of mind in disorder, and *the moral faculty as well as the intellect must be involved in the disorder.*

(44) It has been alleged that laughter is rarely good on the stage—in other words, that it is difficult to imitate laughter or to laugh voluntarily with success.

It scarcely needs to be pointed out that voluntary laughter is quite different from infectious or sympathetic laughter, which is real and involuntary.

As to what actually happens on the stage in regard to this matter I am able to speak with authority. Mr. Forbes Robertson has informed me through Emeritus-Professor Masson that ‘laughter on the stage does not always fail to be convincing,’ but that ‘it must be conceded that stage laughter is often not effective.’ He says, however, that ‘many players have been able to make their audience laugh with them, by infection as it were, and outside any influence of situation or words.’ It appears, therefore, that there may be an imitation of laughter on the stage, which is fairly good, and which closely resembles ordinary involuntary laughter.

‘The born good laugh,’ Mr. Forbes Robertson says, so far as his observation goes, ‘if he happen

to be an actor, will be a good laugh on the stage,' but he adds there is much against him in his efforts to convince an audience of the reality of his merriment. The situation or the words, for instance, may not be adequately funny; or nothing may be seen or heard by the audience that seems sufficient to provoke the actor's merriment; or the pulse, humour, and spirit of the audience, always uncertain, may not at the moment be responsive. Such things as these, he says, may lead to imitated laughter on the stage being called a poor imitation, even when it has been fairly good.

The commotion of the muscles of the chest, larynx, and face is so complicated and extensive in laughter as to make it a reasonable expectation that there should be a difficulty in reaching a successful imitation *at will*, and in appearing really to laugh when there is no real laughter; but it is, on high authority, a difficulty which can be to a large extent surmounted. Stage laughter may often be poor, but on the other hand it can be good and effective.

(45) When a person laughs heartily, his friends beside him often join in the laughter—laugh *with* him—though they have no knowledge of the cause of his laughter. In other words, persons may laugh at the sight of laughter, just as they may yawn at the sight of yawning. Their feet are not being tickled, nor are they experiencing any joyous or merry state of mind, unless indeed that state of mind has been roused by their thinking that the laughter they see and hear is itself ludicrous, in which case they would not be laughing *with* but laughing *at*.

This may possibly sometimes happen, and may then explain why persons join in laughter. But, I think, it is correct to say that laughter in the strict sense is communicable—that laughter evokes laughter as much as yawning evokes yawning, and in exactly the same way. This is not the same as joining in the laughter of an actor on the stage, when the ludicrous words or scenes are presented to the audience as well as to the actor, and when the audience laughs *at* them, as well as *with* the actor in his laughing. In the case with which I am now dealing, the bystanders are supposed to have no knowledge of what has made their friend laugh, yet they join him in laughing.

If this be correct, we have something like a fourth kind of laughter—(1) laughter from tickling; (2) laughter on a mere threat of tickling without actual tickling; (3) laughter as the expression of a mental state; and (4) laughter by infection or sympathy—not as the expression of a felt mental state. The second is related to the first more or less as the fourth is to the third.

There is no more reason, so far as I can see, for thinking that the person who joins in the laughter of one who is being tickled imagines that he himself is being tickled, than there is that the person who yawns with a yawner thinks himself bored or weary. To call such things as these *reflexes through the eye or ear* seems to me to be mere phrasing, and to explain nothing.

(46) In a certain sense it appears to be true that a man who is alone with his own thoughts, and is

shut out from seeing or hearing the actions or words of others, rarely laughs, though he may be in a state of full happiness. The agreeable feelings he may experience in such circumstances seldom excite him to laughter. Even the memories of ludicrous scenes and words rarely bring laughter to the man recalling them, when he is quite alone, though he may have laughed loudly over them when they were actually seen and heard.

It is not correct, however, as I have shown, to describe the boy, who is reading *Artemus Ward* or the *Pickwick Papers* in a room which he only occupies, as being *alone*, for the author of the work he is reading is there with him, speaking to him, telling him about funny things in funny words, and causing him to laugh loud and long. It is clear that the boy is in good company and is not alone.

When we listen to his laughter it seems beyond question the expression of a merry heart, but if we open the door and see him convulsed and contorted, holding his sides, and gesticulating in a senseless way, it is not easy to regard his conduct as the expression of pure joy, so unrelated does his condition appear to any state of happiness.

(47) Sight, hearing, and touch are the senses through which nearly all laughter is excited. They are certainly the senses most operative—the two first in a special degree. Perhaps little more than smiling ever comes through the sense of touch, unless in the case of those who are both blind and deaf from birth, apart always from that special touch

on special parts of the body which constitutes tickling. We see or hear, or both see and hear, most of the things which provoke laughter. Of course the memories of seeing and hearing may do so, but in imagination we are then actually seeing and hearing.

The ridiculous and the humorous are very seldom suggested by the senses of smell and taste.

But these senses figure largely in the delusions of the insane, and often painfully—disagreeable odours surround them, or their food tastes badly and is loathed. And it happens that through no other sense are old memories so easily awakened as through the sense of smell. For example, a man enters a room and finds in it an odour which instantly brings up scenes and events of his far away childhood that he seemed to have altogether forgotten, and he is often easily able to connect the odour with the memories it awakens.

The sense of smell has defects which are of great interest, and which have not been much studied. I refer specially to the inability of certain persons to recognise some particular odour, who otherwise possess an acute sense of smell. I know three persons who have never been conscious that a bunch of mignonette had any other odour than that of a bunch of grass, and who cannot perceive any special odour when the wind is blowing towards them over a large bed of mignonette on a day of sunshine; and I know one person who recognises no odour when a soft warm wind is blowing towards him over a field of beans in flower. There appears thus to be what may be called an *odour-blindness*, if I may coin a word, resembling

colour-blindness. But I have not been able to obtain any good evidence that odours or combinations of odours ever seem ludicrous to the mind.

(48) It is often said that deaf-mutes rarely laugh. Regarding this I can speak from personal observation, and I can support my own observations by what has been communicated to me by others.

I have had the opportunity of knowing intimately several highly educated deaf-mutes. All of them had good mental powers, and they were all constitutionally bright and amiable. I never knew hearing persons who smiled more frequently or more pleasantly than they did. They were often, however, contented with this silent laughter on seeing a ludicrous occurrence, which provoked loud sonorous laughter in others seeing it who could hear. But all of these deaf-mutes at times laughed audibly and with heartiness, and the movements of the muscles of the chest and face were exactly the same as those which take place in the laughter of the hearing. The character of the sounds, however, was different; but, notwithstanding this difference, they exhibited the same reiteration and were produced in the same manner. I think that I should generally be able to recognise the audible laughter of deaf-mutes, just as I should be able to differentiate the laughter of children from that of grown-up persons. Between the smiling of deaf and that of hearing people there is no difference at all in my opinion, and the laughter of the deaf from tickling has the same peculiarities as their laughter from a special state of mind.

Mr. Howard, a well-known teacher of deaf-mutes,

writes that 'the deaf can laugh like others,' and that 'fun, which appeals to the sight, causes them to laugh quite naturally.'

Mr. Elliott, of the Royal Asylum for the Deaf and Dumb Poor, writes that his experience leads him to the conclusion that there is but little difference between the laughter of deaf-mutes and that of ordinary people, though they may not use their voice quite as the hearing do.

Mr. E. A. Illingworth, of the Edinburgh Institution, assures me that deaf-mutes laugh audibly and as heartily as hearing people, though the sound in some cases is rather unnatural.

Another gentleman, who takes much interest in the oral instruction of deaf-mutes, writes that they laugh heartily but never really loud. He attributes this to their not using vocal tones in their articulate speech, and says that oral teachers of the deaf give insufficient attention to voice training, being satisfied with securing articulate sounds. This he thinks may explain the special or characteristic sonorousness of the laughter of those deaf-mutes who have been taught to speak with their mouths.

It is entirely a mistake, therefore, to say that the deaf rarely laugh. Some of them, however, no doubt, especially among the well educated, keep from loud laughing, because they have been told that the sounds they utter are not always pleasant.

(49) As regards those who are born blind as well as deaf, it has been frequently alleged that they never laugh. Their condition in connection with laughter has great interest, and I shall endeavour to

show, as fully as I can, whether it is or is not correct to say of them that they never laugh. Persons thus afflicted are happily not numerous, but the cases of some of them have attracted much attention, and as to these my information is fairly complete. Many of the persons who have furnished this information seem not to have had before them the assertion that those who are both deaf and blind from birth never laugh, and their references to the subject are often accidental.

The first blind and deaf person, whose case was much looked into and written about, was James Mitchell, the son of a Scottish clergyman, born in 1795.

He was blind and deaf at birth. His story has been written by Professor Dugald Stewart and by the famous surgeon, James Wardrop, and his condition was regarded by them as unique. He had good intellectual powers. He is frequently spoken of by both of these writers as smiling. In one instance he is said to have 'done' something 'with a joyful smile.' They also frequently say that he laughed. Once it is said that he 'frequently laughs heartily,' and on two special occasions he is spoken of as 'laughing heartily.' All this laughter, however, might have been silent. It is not distinctly said to have been voiced. But Stewart once records that 'he laughed *aloud* with delight,' and Wardrop records that on one occasion 'he burst into a *loud* fit of laughter.' It is elsewhere said by Wardrop in his narrative that only when angry did he 'make use of his voice, with which he produced harsh and loud screams.'

I frequently saw James Mitchell when he was a *grown man*. I have seen him smile very often, and his smile was pleasant and in all respects like the smile of persons who could see and hear. Sometimes it was very broad and was attended with a chuckle, but I have no recollection of having ever heard him laugh sonorously. I remember, however, that he used his voice when angry, and that it was harsh and unpleasant. He died in 1869.

The next case of this kind which attracted wide attention was that of Laura Bridgman, who was born in New Hampshire, U.S.A., in 1829. She became completely blind and deaf in early infancy. The sense of smell was also nearly, if not completely, destroyed, and that of taste was perhaps blunted as a consequence of the defect in smell. Only touch remained in quite good order.

She was very successfully educated by Dr. S. G. Howe, a medical man of great ability. In successive reports of the Trustees of the Perkins Institution and Massachusetts Asylum for the Blind (1838, etc.), he gave an account of the progress and method of Laura's education. These reports, now difficult to find, have much value in consequence of their having been written by a man of such ability, who was in a position to give him full knowledge. He does not discuss separately or formally her dreaming, laughing, and blushing. The significance of these things in a person so conditioned was not then so fully seen as it is now, but casual allusions to them are numerous. He says that she was fond of fun and frolic, happy and playful, often smiling and laughing. When he speaks of her playing with other young persons, he

says that 'her shrill laugh sounds the loudest of the group.' He writes of her as 'laughing and jumping about,' as 'screaming with delight,' and often as laughing 'heartily' or 'most heartily.' One of his remarks is: 'She laughs aloud and more naturally than most deaf persons [that is, persons only deaf, not both deaf and blind], and she is almost constantly doing so.' He says, however, that the sound of her laughter was not always agreeable. She used her voice curiously in naming persons—uttering a chuckle for one, a cluck for another, a nasal sound for a third, a guttural sound for a fourth, and so on, but no explanation of how this originated was found.

Mrs. Mary Swift Lamson, who was one of her teachers, wrote an account of the life and education of this deaf and blind girl. She speaks of Laura as 'convulsed with laughter,' and tells that 'she laughed aloud at the idea of a dog coming to school,' asking 'can a dog talk with fingers?' and adding, as she laughed heartily, 'a dog has no fingers.' We are told by Mrs. Lamson that 'one day she pretended that her doll was sick, put it to bed, placed a bottle of hot water at its feet, laughing all the time most heartily.' She speaks of Laura elsewhere as 'bursting into a loud laugh,' and says that she 'has a pleasant ringing laugh,' though at times she 'utters sounds that are disagreeable.'

Then further it is told by Lieber that when the contents of a letter from a friend, whom she greatly loved, were communicated to her, 'she laughed and clapped her hands, and the colour mounted to her cheeks.'

On these testimonies it may be accepted as certain

that Laura Bridgman, though without the senses of sight, hearing, and smell, often laughed audibly, and still oftener smiled.

I have already written of Miss Bridgman's dreams, and further on I shall have to write of her blushing. I am obliged to bring up her case over and over again, but each fresh reference to it is from a new standpoint. So it is also with Miss Helen Keller, whose dreaming, and laughing, and blushing I have to discuss separately. It will be quite understood that I could not have said in one place all I have to say regarding these two unique cases of blindness and deafness. Miss Keller is also an American, and she is still alive and young. She is very intelligent, and her education has been so successful as to be almost beyond belief. I possess an excellent account of the methods adopted in teaching her and of the extent of her acquirements. But it gives no information regarding the matter with which I am at present concerned. I therefore applied to Mr. Hitz, of the Volta Bureau for the Increase and Diffusion of Knowledge relating to the Deaf (Washington City, U.S.A.), and he tells me that from frequent personal observation, and after consultation with Miss Sullivan, her distinguished teacher, he is able to say that Miss Keller laughs audibly and at times extremely heartily. He says that she is of a joyous temperament; that he has seen her, when bantering some one, shake with audible laughter, and place her hand on her mouth to prevent too much boisterousness; that, when she reads an amusing passage in a book, she smiles and occasionally gives an audible exclamation, akin to a suppressed outburst of laughter; and that

frequently when by herself, spelling with her left hand into her right, she laughs aloud.

This last statement appears to furnish an exception to the common experience, already referred to, that we rarely laugh, in a proper and full sense, when we are quite alone.

Miss Keller's teacher, Miss Sullivan, writes me as follows regarding her pupil's laughter: 'Her laugh is low and pleasant. It lacks the ringing quality of a woman's voice, but has a peculiar and delightful merriment. Sometimes it is a low chuckle, sometimes a high but soft giggle. Her smile is very beautiful.'

Julia Brace, who was also completely deaf and blind, and who was educated up to a certain point at Hartford, Connecticut, has also been much written about, but these writings give little information as to her laughing. It is said, however, that 'her smile is gentle and sweet, though of rare occurrence,' and that 'sometimes when apparently in deep thought she is observed to burst into laughter.'

Here again we have what appears to be an exception to the belief in the rarity of laughter in the case of persons who are alone. There may have been persons in the room with Julia when these 'bursts of laughter' occurred; but, unless she was aware of this, as she saw nothing and heard nothing, it would be difficult not to regard her as being quite alone.

(50) All the persons of whom I have been just speaking were entirely deprived both of sight and hearing, either from birth or from quite early infancy, but they all had good intellectual powers. Ludicrous

ideas could be conveyed to them, though not through the eye or ear. They were liable like ordinary persons to the so-called tickling of the mind, and the point of interest here is, that this mental state was expressed in them by smiling or laughing, in the same way as in those who see and hear. Indeed the physical phenomena of laughter appear to be the same in them as in ordinary people. There are the same reiterated sounds 'produced by deep inspirations, followed by short interrupted spasmodic contractions of the chest and especially of the diaphragm,' the mouth opens and widens, the corners of it are drawn backward and upward, the upper lip is raised, and the orbicular muscles of the eyes are contracted. All these things they have never either seen or heard in others, and the phenomena cannot, therefore, in any sense be the result of imitation. They cannot have been learned. They are involuntary—are not directed by the *Will*. They seem to be innate, instinctive, or inherited. Why this violent and widespread muscular commotion should express a particular state of mind remains a mystery, yet not a greater mystery, as Darwin I think points out, than the wagging of its tail by a young puppy, when it is pleased, just as an old dog does, or the arching of its back by a kitten, when it is angry, just as an old cat does. The puppy and the kitten are too young to have learned these expressive actions from their elders. The instant arching of the back of a young cat that has been brought up without seeing a dog, when suddenly introduced to one, shows at its highest the wonderfulness of this instinctive or inherited expression of a mental state. Darwin and others have pointed out that the movements are

never voluntarily and consciously performed for the special purpose of giving expression to an emotion, and that there is no ground for believing that any muscle in any part of the body has been developed or exists exclusively for the sake of any such expression. The commotion attending laughter, therefore, does not constitute any *special* mystery. It is only one of a crowd of such mysteries.

We do not know, as Darwin says, why the sounds which man utters when he is pleased have the peculiar reiterated character of laughter, and it is equally obscure why the corners of his mouth are retracted and the upper lip raised, why the respiratory muscles and at times even those of the limbs are thrown into rapid and vibratory movement, and why there are wrinklings about the eyes.

(51) In profound idiocy there is neither audible nor silent laughter. But even the deeply idiotic utter sounds which may be called *crying*, which appear to give expression to feelings of pain or distress. Such *crying* of the deeply idiotic, however, is not often accompanied by weeping.

It is quite otherwise with imbeciles, that is, with those less completely defective in mind—the difference between idiots and imbeciles depending practically on the degree of the mental defect. There are of course various forms of idiocy and various forms of imbecility, but taking the two classes roundly, they are separated and defined for practical purposes by the measure of the mental defect, and in some of those, who are called and treated as imbecile, the defect may not be great.

Imbeciles, with their condition thus explained, laugh and smile freely—more or less freely according to the degree of mental weakness. Their smiling seems to express pleasure and happiness, but vanity and the love of approbation are at the root of much of their smiling and much of their happiness. The facial muscles are acted on in the same way as in the smiling of ordinary children. The sounds attending their laughter are distinctive, with differences in different individuals as might be expected. There is, however, the same reiteration as in the laughter of ordinary children, and the physical phenomena generally are essentially of the same character.

The pleasantness of the mental state, which causes the laughter of imbeciles, must often be associated with no definite ideas. They could not tell, and can scarcely know, why they laugh even when the laughter comes in bursts and seems to indicate much happiness. But there is not really much difference between imbeciles and ordinary children in this respect.

Grotesque and broadly ludicrous pictures thrown by a lantern on a screen excite peals of laughter in many imbeciles, but there are always some, who, for no reason that can be assigned, see nothing funny in the pictures and remain unaffected, neither smiling nor laughing. To some extent, however, this occurs with ordinary children, in a way which cannot be easily explained.

Imbeciles are not much given to mimicry among themselves, and seeing others mimic does not so readily provoke laughter as it does with ordinary children, and with savage races—Australians and

Hottentots, for instance. These last, however, though their mental powers may be of a very low order, are in what to them is a normal state of health, and they cannot be said to labour under imbecility, which is a state of disease. The two conditions cannot be compared. There may be imbecile Bushmen, but Bushmen as a race are not imbeciles.

Tickling of the armpits or soles of the feet causes imbecile children to laugh, but the general opinion is that they are not so readily tickled as ordinary children, and it is almost certain that, when they reach manhood or womanhood, they are much less easily tickled than ordinary people.

(52) The tickling that causes laughter is a tickling of the skin. A man may in a sense be said to live between his skin and his mucous membrane, and it seems possible that, when certain parts of his inner skin or mucous membrane are acted on in a way more or less resembling what we know as tickling, special states of mind may be induced, which differ greatly from the state held to be consequent on tickling certain parts of the outer skin—as greatly, perhaps, as sadness differs from merriment. For example, it is possible that hardened feculent masses in the large intestine may act on the mucous membrane in a way somewhat analogous to tickling, with mental depression as the result. Then it is possible that a worm in the œsophagus may, in consequence of something like tickling, give rise to maniacal excitement, as in that or in some other way it is alleged to have done. I do not go further than indicate these as possibilities. In Dr. Burn-Murdoch's case, given

by Wyllie in his *Disorders of Speech*, very marked effects on the mind are not unfairly attributed to, or at least connected with, a large round worm somewhere in the intestine. A child four years old became noisy, unmanageable, and destructive, grimacing and whistling loudly, and using very foul language. Under treatment this child passed a round worm ten inches long, and a rapid improvement of all the symptoms then took place. Professor Wyllie finds the interest of the case in its showing how the mental functions may be disturbed by an *irritation* of the intestine acting reflexly on the brain. My comment is that it is possible to hold this *irritation* as comparable to *tickling*. If it is comparable, then the number of such comparable irritations may be great, and the effects produced by them various.

(53) When nitrous oxide or laughing-gas is respired in a suitable quantity and manner it causes laughter. The physical phenomena of this laughter are the same as those which attend laughter either from tickling or from a merry state of mind, unless perhaps they are differentiated by the more or less complete absence of anything that can be called smiling. Neither Davy¹ nor any other writer on the subject, so far as I am aware, makes the special commotion of the facial muscles, which constitutes a smile, to be a result of breathing the gas. But the references to voiced laughter, as distinguished from smiling, are abundant. Indeed the familiar name of

¹ *The Collected Works of Sir Humphry Davy, Bart.* Edited by his Brother. Vol. iii. London, 8vo 1839.

the gas is *laughing-gas*. I have frequently seen nitrous oxide given as Davy gave it, and cannot remember that I ever saw the commotion of the facial muscles, which constitutes smiling; but it was not looked for, and it may have been present. If it is steadily absent from the voiced laughter caused by this drug, it would be a point of much interest. The phenomena of voiced laughter are present, but perhaps the muscular commotion is greater, and it may extend much beyond the muscles of respiration. There is more stamping, dancing, running about, and vociferating. Davy, in reference to his own experiences, speaks of an 'irresistible propensity to action'; he says, 'sometimes I manifested my pleasure by stamping or laughing only—at other times by dancing round the room and vociferating'; he speaks of a disposition to muscular movement and to merriment; on one occasion he says that he 'made strides across the room, and continued for some minutes much exhilarated,' and on another occasion that he 'had a great disposition to laugh' and that he 'experienced pleasure by laughing and stamping.'

(54) Many distinguished persons breathed the gas at Davy's wish, and recorded their experiences for his use. In these records, James Thomson speaks of 'involuntary laughter' and of the 'satisfaction felt in violent exertions of the legs and arms'; S. T. Coleridge says 'the only motion which I felt inclined to make was that of laughing at those who were looking at me'—adding that 'he could not avoid, nor indeed felt any wish to avoid, beating the ground with his feet'; Wedgwood says that he

‘acted ridiculously’ and ‘could not avoid doing so,’ and that he had ‘a very strong inclination to make odd antic motions with his hands and feet’; Thomas Pople says that he had ‘an involuntary burst of laughter’; Lovell Edgeworth tells that he had ‘a strong propensity to laugh’ and ‘did burst into a violent fit of laughter,’ that he ‘capered about the room,’ and could not restrain himself; M. M. Coates says that he ‘had an irresistible propensity to violent laughter and dancing.’

(55) The beginning of the laughter often took place, usually I think, when the breathing of the gas ceased. By several persons this is definitely recorded. Robert Southey, for instance, says: ‘When I took the bag from my mouth, I immediately laughed,’ and adds that ‘the laugh was involuntary but highly pleasurable.’ He also says that he was ‘compelled to exercise his arms and feet.’ J. W. Tobin says ‘on removing the bag from my mouth I laughed.’ He started from his chair, vociferating with pleasure, ran through the rooms of the house, and gave several blows, ‘but in the spirit of good humour,’ to a stranger who was present. G. C. Bedford says that ‘when the bag was taken away, an involuntary though agreeable laughter took place.’

(56) It thus appears that the laughter caused by the breathing of this gas is a boisterous form of ordinary laughter. In laughter from usual causes there often occur shouting, jumping, dancing, gesticulating and throwing the arms and legs about in an altogether senseless and ridiculous way; but these things appear

to occur more constantly and with more emphasis in the laughter which follows the inhalation of nitrous oxide.

Looked at with reference to its cause, this *drug-laughter* becomes still another kind of laughing; but, apart from its cause, it is nothing more than a form of noisy ordinary laughter.

(57) There is one point in connection with this drug-laughter which seems to me of interest and value. Almost without exception those who record their experiences of it speak of the pleasurable feelings which are caused by breathing the gas, and they often speak of the pleasure as being strong. In other words, it appears to be a laughter of happiness. Davy himself calls it a 'pleasurable *delirium*' and 'a *delirious* trance.' Coleridge calls it 'unmingled pleasure,' 'highly pleasurable,' an 'ecstasy.' George Burnet says it is 'a lively enjoyment inconceivably pleasurable.' P. Roget says that it was 'like a half *delirious* dream,' that during its continuance thinking is active but delirious, and that the feelings are so agreeable as to create a longing for repeated doses. This last is a point of interest. James Thomson calls it 'a high extraordinary degree of pleasure.' Henry Wansey says the sensations were delightful, with 'highly pleasurable thrillings all over the frame.' Stephen Hammick says he had a 'sense of exhilaration' and of 'extreme pleasure.' Southey says that he felt 'unusually cheerful,' and Kinglake that he had been 'almost *delirious* by highly pleasurable sensations following in the train.'

This testimony to the pleasantness of the effects of

breathing nitrous oxide leads me further on to suggest a possible use of the gas as a therapeutic agent.

There may be a laughter which cannot easily be regarded as the expression of a joyous state of mind, but the laughter provoked by inhaling nitrous oxide, in the way Davy gave it, seems nearly always to be the expression of happy mental feelings.

(58) There are other points of interest in the records of these experiences. For instance, Davy says that, when he inhaled the gas, a candle or ray of sunlight became dazzling, that luminous points passed before his eyes, and that his hearing was rendered more acute. Others had a similar experience.

Many speak of the difficulty of describing the mental state, and say that new terms would be needed to do it well. There is frequent reference to the rapidity of the thinking. Davy says that 'highly vivid ideas passed rapidly through his mind,' and P. Roget that 'ideas succeeded one another with extreme rapidity,' and that 'thoughts rushed like a torrent' through his mind. The ideas are often called vivid and novel, and for this reason are said by some to be 'calculated to leave a lasting impression on the memory.' But they do not really appear to do this—indeed, by almost universal consent, it was found difficult to recall the thoughts with fulness and accuracy, just as happens in dream-thinking.

(59) If the state of mind, and the bodily movements, and the condition of the senses, and the conduct, which result from breathing nitrous oxide, were to continue, instead of ceasing soon after the inhala-

tion of the gas is stopped, I scarcely think that any one would hesitate about describing the condition as one of mental disorder—toxic of course in its origin. It would be a form of mental disorder, indeed, which would almost certainly lead to the seclusion of the person in whom it appeared, because of the trouble and discomfort he would cause to those about him. The transitoriness of the condition does not make it differ scientifically from the condition if it persisted.

(60) But the occurrence—the repeated occurrence—of such short fits of mental disorder appears to cause no injury. On the contrary, the recorded experiences of many capable observers is not only to the effect that no harm is done, but rather that the result is a benefit, if we may accept as signs of benefit a consequent sense of bodily well-being and strength, activity of mind, sound tranquil sleep, and an unusually good appetite. Sir Humphry Davy himself, in recording his numerous personal experiences, seems to me to be clear on this point, and scarcely less so are many other observers.

(61) Davy pointed out the possible value of the gas as an anæsthetic in minor surgical operations, and now, long years after he did so, it has come into constant use for that purpose, particularly in dental surgery. It would not, I think, have been a far-fetched speculation, if he had also suggested its possible value in states of mental depression, if inhaled in suitable doses, with a proper admixture of common air, and with sufficient frequency over a period of some length. That it can be

inhaled with frequency and without injury his own experience proved. It went to prove even more, for he gives as its effects sound refreshing sleep, a good appetite, a sense of general well-being, and a healthy mental activity. If it led to anything like this in the case of a person under mental depression, might it not prove useful? The question at any rate is worth the asking. I am speaking of course of the inhalation of the gas as carried out by Davy, and not as now carried out to get anæsthesia in minor surgical operations. The pure gas is now used, and this does not appear to cause much if any exhilaration. To obtain this exhilaration it appears that the gas must be mixed with common air, and experiment could settle the desirable proportion of common air to nitrous oxide, and the quantity of such mixture needed to cause pleasant exhilaration only, without also causing boisterous laughter and gesticulations—a kind and degree of exhilaration, which those experiencing it would like to have prolonged and repeated.

(62) Dr. John Smith, LL.D., and Dr. Guy, two competent observers, tell me that they have neither heard nor known of any one who wished to inhale nitrous oxide solely from a desire to experience again the effects produced on a previous inhalation, when that inhalation had the production of anæsthesia as its object. But the gas as it is given for that purpose—they and others assure me—does not cause exhilaration, and this is attributed to its being inhaled in a pure state without any admixture of common air. The whole scheme of the apparatus

employed for the administration of the gas in dental surgery seems designed to prevent any admission of common air, and it is believed to do this effectively.

(63) It was quite different in the early administrations of the gas. In these there was always an admixture of common air. Indeed the method of inhaling it at that time made this inevitable. When the gas is breathed in its unmixed state it does not appear to cause boisterous laughter. It appears to begin too quickly to cause a degree of asphyxia, or to exercise a specific action, or perhaps to do both. I do not think that these points are quite settled. The nitrous oxide is not broken up in the lungs, with a setting free of oxygen as the result. The pure gas inhaled is exhaled as pure gas, though the exhalations contain things in addition.

(64) As the gas was breathed by Sir Humphry Davy and his friends, it was never pure. Common air was always present in greater or less quantity, and when so breathed pleasurable exhilaration seems to have always followed. In this way of breathing the gas a desire to repeat the dose might conceivably arise. Indeed there are indications in the writings of Sir Humphry Davy on the subject, that if there was not an active desire to repeat the inhalations, there was at least no unwillingness. If the breathing of the gas were to benefit persons in a state of mental depression, it would require to be so exhibited as to cause pleasant exhilaration and happy laughter, stopping short both of boisterousness and of the manifestations of asphyxia.

(65) There is a curious little book, published in Amsterdam in 1768, with the following title:—*Traité des causes physiques et morales du Rire relativement à l'art de l'exciter*. I believed it to be a scarce and little known book. It is anonymous, but it is attributed to Poinsinet de Sivri. He only claims, however, to be the editor of a manuscript which fell by accident into his hands. I have been in possession of a copy for many years, and I prepared an abridged translation, intending to give it as an appendix to this paper. But having recently obtained, from a quarter in which it was little likely to be found, a copy of a full and good translation into English, published in London (12mo, 1769), I imagine that the book may not be so rare as I thought it, and that I would not, on the ground of its rarity, be justified in giving even an abridgment as an appendix to my paper. Therefore I have departed from my intention, and shall content myself with merely indicating the character of the book. The translator does not give his name. The somewhat changed title of the book runs as follows:—*An Essay on Laughter, wherein are displayed its natural and moral causes, with the arts of exciting it*. The translation is dedicated to Samuel Foote.

(66) The editor, Poinsinet de Sivri, says in his *Avis* that when the manuscript came into his possession it was simply entitled *Traité du Rire*, and he put it aside believing it to be a mere frolicsome performance, a light piece of drollery, a *jeu d'esprit*. But on the report of a friend who had borrowed the manuscript, he was induced to read it, found it to be

replete with good ideas, and resolved to have it printed. It is called by the translator a learned and ingenious performance, and the original editor says that to all persons of taste the book must prove an agreeable present.

(67) The writer of the manuscript is of course made to appear as a different person from the editor. He says that the essay arose out of a visit by him to M. Tiron du Tillet, where he met many men of distinction in letters and philosophy, among others, Destouches, Fontenelle, and Montesquieu. It happened that one of the company laughed without any apparent cause, and he was asked to tell why he had laughed, and was pressed to give an answer. He said that he would do so if others present would show what laughter is, and show also what excited them to laughter. Destouches, Fontenelle, and Montesquieu thought this a reasonable request, and they agreed to give the company their views, which they did after a stroll in the garden to gather up their thoughts. The writer of the manuscript says that it was his business to make a faithful recital of their opinions and arguments.

(68) Destouches was the first speaker, and with much elaboration and ingenuity he propounded and defended the view that laughter is the expression of a joyous and pleasant state of mind, with the very important qualification that the *joy must be a reasoned joy*.

(69) Fontenelle followed with an effort to overturn the opinions of Destouches, and then proceeded to show

that all laughter represents in some way or other a state of mental disorder—enunciating his views with skill and earnestness.

(70) Montesquieu began by declaring, and attempting to prove, that the opinions of both of the speakers who preceded him were altogether erroneous, and he then endeavoured to show that laughter is born of pride and vanity—holding that he had completely established the soundness of that opinion.

(71) The foregoing is so brief and condensed a presentation of the three lines of thought that it must necessarily be imperfect, yet I think it sufficiently indicates the character of the differing views as to the nature and causes of laughter.

(72) The history of the book is obscure. The three orations may have been really delivered by Destouches, Fontenelle and Montesquieu. That is possible, for all three were in the prime of life from 1715 to 1745. They died, in the order in which I have named them, in the years 1754, 1757, and 1755 at the age of 74, 100, and 66. Titon du Tillet, in whose house they are said to have met, was also then alive. If the speeches were really made by these men, and at once committed to writing, the manuscript must have been somewhat old when it fell into the hands of Poinsonet de Sivri.

(73) It is not easy to understand how a listener, before the days of shorthand writing, could so fully retail these orations from memory. He professes even to have preserved the different styles of the speakers,

and he tells us that the style of Destouches was ‘unaffected, pure, graceful, and copious’; that the style of Fontenelle ‘showed more of art, was florid, subtle, and elegant’; and that the style of Montesquieu was ‘now grave, now gay, now serious, now sublime.’ He adds that all of them amply discussed their theme, and I endorse that opinion. The little book is excellent reading as regards style, and more excellent still as regards matter.

(74) The larger conclusions, which seem to be the outcome of this short study of laughter, are as follows:—

1. That laughter is a state of mental disorder, which is evidenced by the irrational and purposeless phenomena attending it, and the absence during their continuance of all coherent thought.

2. That these short states of mental disorder, which may be very frequent, do not hurt us, but on the contrary do us good.

3. That laughter is not, even usually, the expression of unalloyed pleasure and joy; that on the contrary it very often expresses states of mind which are mean, contemptible, and cruel, the moral faculty being then in abeyance; and that laughter so arising is only pardonable on the view that it is a state of mental disorder.

4. That deep joys are not expressed by laughter.

5. That laughter is not excited in regard to what involves danger or great suffering.

6. That in like manner blows or firm pressure do not tickle and so produce laughter.

7. That there are various kinds of laughter, as, for instance, (1) Laughter as the expression of a mental state; (2) Laughter by infection, not due to the mental state of the laugher; (3) Laughter from tickling certain parts of the skin; (4) Laughter on a threat of tickling, when the laugher is not actually tickled; and (5) Drug-laughter, consequent, for instance, on the inhalation of nitrous oxide gas.

8. That laughter is involuntary, that in a strict sense it is impossible to laugh at will, and that it is very difficult to imitate laughter successfully.

9. That there is a laughter the continuance of which we desire, even though we may be ashamed of its cause, if that cause be closely examined and fully realised.

10. That we always make efforts to avoid tickling and the laughter which follows it.

11. That the provocatives of laughter are not the same at all ages or in all individuals or races.

12. That individuals and races laugh differently from each other, but that the essentials of the phenomena are the same.

13. That apes seem to laugh in a fashion and dogs perhaps show the starting of laughter from tickling, but nevertheless that man may be said to be the only animal that laughs.

14. That there is no essential difference between the laughter of those having all their senses and those deprived from birth of sight or hearing or of both sight and hearing.

BLUSHING

BLUSHING

(1) THE state of the mind during a blush, described broadly, is one of confusion, and this is often strongly marked. 'Covered with confusion,' indeed, is a way of describing persons who are in the act of blushing. Darwin says that they 'lose their presence of mind, and utter singularly inappropriate remarks. They are often distressed, stammer, and make awkward movements and strange grimaces.' This excellently describes their condition. Excessive blushers do not rightly know what they are saying, and *feel* stupid. Burgess says that their answers to questions are 'monosyllabic, vague, and incoherent,' and that they always appear 'abashed and confused.'

The person who blushes has the feeling that his will is overpowered, and he is conscious of a sense of helplessness and flurry. He feels that his eyes are irresistibly borne down, and that he cannot look at the bystanders or bear to be looked at by them.

Dr. Harry Campbell's view of the state of mind in those who are blushing intensely is still stronger, but not, in my opinion, too strong. He says that 'in severe cases it almost amounts to a complete paralysis of the intellect, the individual being unable to pursue any consecutive train of thought.' The stammering and stuttering of those who are blushing are often

alluded to and have been frequently observed by myself.

It is not easy to show that in blushing the moral faculty is in confusion as well as the intellect. There is little opportunity for the disclosure of moral disorder, chiefly because of the rapid passing of the condition. And if I think that in blushing, as in dreaming and laughing, the moral faculty is in disorder, I have not much to support the opinion, beyond the knowledge that so many of the forms of intellectual disorder involve, without any doubt, disorder of the moral faculty—the union is so general as to make it improbable that in blushing we have an exception. I make no strain to get further than this.

It is the occurrence of a well marked mental confusion during the act of blushing that gives me an interest in the subject, because it is of such a nature as to prevent any hesitation in regarding it as a transient state of mental disorder. Its being short-lived and evanescent does not change its nature.

These attacks of disordered mind may be very frequent in the young, yet they do no harm, and the recovery from them is quick and complete. It is not quite easy to go further, as it is in dream-thinking and in laughter, and to assert that they do good. This assertion could only be made by a somewhat forced speculation, which would serve no useful purpose. It is enough to say that if in any case the state of mind referred to were prolonged, we should then have a condition of insanity in the ordinary sense, and the individual in whom it occurred would probably require '*care and treatment.*'

The rapidity of the manifestation of this mental

confusion is a point of great interest, and perhaps of still greater interest is the rapidity of its complete disappearance. It may both come and go with a quickness which many observers call instantaneous. This is correct enough as regards its coming, and though its going, I think, is generally somewhat slower, it is still in many cases extremely rapid. There is another point of much interest in the way blushes may quickly succeed each other—fresh blushes chasing each other over the face—in the fact that the mental confusion goes completely with the disappearing blush and returns with that which follows, the interval being often so short as scarcely to be measurable. So that it seems possible to have attack after attack of disordered mental action and recovery after recovery, the intervals being frequently stated in moments rather than minutes. The possibility of such an occurrence is surprising, and of course it adds to the surprise that no injury seems to follow.

The flush of anger has no connection with the blush of shame, yet in this connection I am reminded that a fit of anger is proverbially accepted as a short madness.

(2) A blush is a good deal more than a mere reddening of the face, neck, and ears. A 'blushful face' is always averted, and has 'a downcast aspect.' The eyes turn towards the earth and the eyelids droop over the eyeballs. The features are in a state of collapse. The blusher seems 'to hide his head for shame.' At least he avoids the gaze of the spectator, and 'looks away,' often moving restlessly from side to side. The whole aspect of the countenance is

changed. It loses its wonted animation. The voice is altered. The skin everywhere tingles, and there is a fluttering sensation about the heart. These things readily differentiate the redness of blushing, which 'heightens the charm of beauty,' from the many other invasions of redness on the face, which cannot be said to have that effect.

It is asserted that persons about to blush are conscious of a peculiar sensation in the epigastric region before the reddening of the face actually takes place. My own inquiries, extending now over a long period, indicate that this is generally correct. It may be accepted as certain, I think, that the heart and epigastric region exercise a sympathy in nearly every mental emotion, especially if arising suddenly. The heart in a special manner seems to me to show this sympathy. Even slight disturbances of the mind are reflected on its action. It beats more rapidly, and there is some consequent disturbance of the breathing. But the blush comes and goes so quickly that the blusher has little time to become conscious of any antecedent sensations in regions distant from the face, and it is not easy to obtain accounts of them which have much value.

All that I desire to show here is that blushing is more than a clothing of the *face and neck* with redness.

In that blush which is in some way connected with personal appearance, it is not difficult to see how the face should be averted, but it is not so easy to see why this should happen when there is a moral cause for the blush, that is, when the sense of shame has a moral origin.

(3) A relaxation of the muscular coats of the small arteries by which the capillaries become filled with blood, implying that the proper vasomotor centre is affected, is said by Darwin to be the explanation of the redness of blushing. In a broad general sense this is correct and sufficient. It is at least quite enough for my purpose. In what follows reference will often be made to the ordinary limitation of the redness to the face, neck, and ears, and to many other attendant phenomena. It is not necessary, however, for the purposes of this paper to examine minutely all that is involved, anatomically or in other related senses, in the quick suffusion of these regions with blood. There are differences of opinion—not in my opinion of vital importance—as to how the thing occurs and as to what precisely takes place, but I am only interested and concerned in the final event—in what happens as the outcome. To deal with these other matters would be a good and sufficient subject for a separate essay, but to do so here would draw attention from points on which I wish it to be concentrated.

(4) Of all the manifest bodily alterations from mental emotion blushing is perhaps the most surprising, and it may be regarded as the exclusive property of man. Darwin says that ‘it would require an overwhelming amount of evidence to make us believe that any (of the lower) animals could blush.’

Many lovers of the lower animals believe that dogs feel and show a sense of shame, particularly of the shame that attends the detection of some fault in them by persons to whom they are attached; but, if they feel such a sense of shame, they show it in

their own fashion, and this is never by anything which has an analogy to blushing. Nor is there any one special way of showing it common to all dogs. Other animals are also believed to show this sense of shame, but nothing which is known in regard to any of them goes to weaken the opinion that man is the only animal that blushes. Perhaps there is room for questioning whether he is the only joker in nature and the only laughder, but it seems almost beyond question that he is the only blusher. This gives to the subject a special interest, though it does not really much affect the side of that interest which has occupied my thoughts.

(5) Bacon says: 'Shame causeth blushing, and casting down of the eyes,' and there is not much more than this to be said about the cause and character of blushing. It consists of a 'resort of blood to the face with a casting down of the eyes,' arising out of a sense of shame.

There remains, however, the need of knowing what is meant by the word shame. Locke says that it is 'an uneasiness of the mind upon the thought of having done something which is indecent, or something which will lessen the valued esteem that others have for us.' This seems to me to give the word nearly the whole meaning that is necessary in its relation to blushing.

Locke's definition makes the uneasiness of the mind to arise upon the thought of two different things. First it makes it arise upon the thought of anything that savours of indecency or indelicacy, which is being looked at or noticed by others, such

for instance as an accidental exposure of the person. It will be observed that I make an addition here to Locke's definition. I make it essential or at least very important, that the thing be seen or observed by others. But I do not mean by this, that the thing shall be actually seen or even have actually occurred. If others look as if they saw some thing of this character, though it may not really exist, it is often sufficient to raise the sense of shame and the consequent blush. Nor is it necessary that the thing should be positively indecent. The apprehension that it may be considered indecent by those who are looking on is frequently sufficient. It is sometimes enough to call up the sense of shame and its expression in a blush, to be 'surprised into situations which merely attract the peculiar attention' of bystanders, though there is not even a suspicion of indelicacy in the situations. There is a 'quick apprehension that reputation and character are in danger,' and this is enough. A mere doubt or troubled thought as to how we are looking in the eyes of others may be sufficient to bring up the blush. The feeling of being looked at intently, with an apprehension as to what may be seen or thought, appears to be a steady element in 'the uneasiness of mind upon the thought of having done something which is indecent,' which Locke gives as the first part of his definition of that shame which raises the blush. I desire here to make another change or amplification of this part of Locke's definition. The word indecent is too crude. As used by him, it clearly includes unbecoming and indelicate, and is not confined to sexual indecency.

The blushing of this first kind is far more common

than the blushing of the second kind to which I am now to refer, namely that caused by Locke's 'uneasiness of mind' upon the thought of having done something with blameworthiness or guilt in it, that has been discovered by others who are present. Here again I make a change in Locke's definition. It is almost an essential that the discovery be made by others who are present, and whose good opinion may be lost or lessened—to this extent at least it is so, that thinking of a deed and its guiltiness when in solitude, and when the blame of others is not being expressed or in danger of being expressed, does not call up the blush of shame. The face of a girl, who suddenly becomes aware that a fault is being brought home to her in the presence of others, as for instance that she has been detected in a meanness or falsehood, is covered with a blush. She fears the open 'blame of evil,' and her cheeks redden with shame. Yet there may be no real guilt, as she may quite well know. The fear of being thought blameworthy is sufficient to raise a blush in persons of great sensibility, and they are numerous among the young. The blush of this kind does not always disclose a real transgression, though of course it does so with frequency.

The division of blushes into the true blush, the false blush, the blush of modesty or bashfulness, the blush from morbid sensibility, the deceptive blush, and the blush of conscience, serves no useful purpose, since all these blushes resolve themselves under examination into some form or other of the two kinds of blushes under a sense of shame, of which I have been speaking.

When we speak of 'modest worth' that 'blushed at

its own praise,' we seem at first sight to reach a blush from a cause that is far removed from shame, yet in point of fact this person of 'modest worth' blushes because he is ashamed that it is openly noticed, that attention is improperly drawn to him as its possessor, or that praise beyond desert is given. He blushes from a quite praiseworthy shame. Indeed the sense of shame that excites the blush is often praiseworthy. Modesty may beget a blush either at too high praise, or when under humility about an indelicate or unbecoming word or deed.

Being intently looked at, for any reason, which leads to Locke's 'uneasiness of mind,' is also a cause of blushing. The blusher is ashamed of being openly and much noticed, and it may be enough that he thinks himself so noticed. He is probably still young—for blushing almost belongs to youth—and has not yet acquired the cold, hard, and callous condition of advanced years. It might be well called, as indeed it has been called, 'a blushless impudence,' if he only showed indifference, when he thought the bystanders were intently gazing at him. Nor would it be far otherwise described, if he took with indifference such quite comparable, though greatly differing, occurrences as having a blameworthy act or word openly disclosed and noticed, or getting into a situation that involved some sort of indelicacy.

All blushing seems thus to work round to being the expression of a sense of shame, and no young person should regret that she feels what brings up the blush. To say of a girl, as they do in Gaelic, that 'her face *lit up* with shame' is not to speak evil but good of her. To say, on the other hand, that she

had a nature which could not feel a sense of shame, and that she was incapable of blushing, is to give her a bad report.

If I am asked to define with sharpness and shortness the meaning of the word shame, as the word which best names the cause of blushing, I confess that I cannot do so, nor have I found any other person able to furnish such a definition. Nevertheless, I think that I have made plain the meaning of the word, and have left no room for misconception. I think that I have made it clear that feeling the shame which calls up the blush is not a thing which young persons should be sorry to experience. It is in the time of youth that this sense of shame does and ought most readily to arise. Its not arising readily in later life can, I think, be easily explained, as I shall afterwards show. It almost belongs to youth, and it is an adornment of the youthful mind, as much as the blush which expresses it is an adornment of the youthful body. The too ready rising of this sense of shame, and the too frequent calling up of the blush, may no doubt cause inconvenience and distress. Excesses do so in all matters. But it is better far for a young person to blush too often, than not to blush at all.

It is of importance to realise that, practically always, the things which excite the blush of shame are of a trivial character. Gross indecencies or great crimes never rouse blushing. The things that call up the blush are often, if not generally, of an exceedingly trivial nature. A person thinks he has shown some deficiency in what is proper in manners or conversation, or he breaks some rule of etiquette, and he is ashamed and blushes. He dreads that he may be

charged with something of this kind, and he becomes flurried, embarrassed, and blushes. He is corrected for some small error, and he becomes confused, ashamed, and blushes. He is asked a commonplace question, has not a ready answer, and he blushes. There is something out-of-the-way, some blemish or peculiarity about his dress or person, he sees that it has attracted notice, and he blushes. And so on endlessly. It is nearly always something small—never a thing of grave import.

Darwin makes self-attention of much importance in the production of blushing, chiefly as directed to personal appearance, but also as directed to moral conduct, always however in relation to the opinion of others. In this he is right, but, with theories of evolution always in his mind, he pushes the view into an explanation of the far-off acquirement of the habit of blushing. He does not, however, do this with any success. He has nothing to adduce which shows that blushing was ever different from what blushing now is, and it is only with blushing as it now exists and as we see it, that I am concerned.

There is one point in regard to the causes of blushing which must not be lost sight of, namely, that young men and women blush more frequently and easily in the presence of the opposite sex than in that of their own sex. This is easily understood as affecting sensitiveness about personal appearance under depreciating remarks, or under a feeling that he or she is being intently regarded. As has been already stated, the blush of shame connected with personal appearance—some peculiarity about dress or some blemish on the person—or with some

breach of etiquette or *gaucherie* in conduct, or with some indelicate or unbecoming word or act, is much more common than the blush at being found out to have done something which deserves blame; and the first is most readily excited in the presence of strangers, while the second comes most easily in the presence of acquaintances whose opinion is valued. As a general statement, undeserved or unexpected approval causes blushing, but disapproval or ridicule does so much more frequently.

There is still another point which requires notice in considering the source of blushing. It is not absolutely necessary that the thing which excites the blush shall relate to the blusher himself. The shame that brings a blush may arise from the appearance or conduct of another. This is not of frequent occurrence, but it is a well-known possibility.

(6) The shyness, which is spoken of in relation to blushing, has nothing to do with fear, though the word, as otherwise used, may be regarded as having fear within its meaning. Both fear and cowardice may be involved in its meaning. But the shyness that fits and prepares one for the blush of shame is made up of diffidence, bashfulness, and humility, and also of modesty in its non-sexual sense. This kind of shy man may have the courage of a lion, may wear the Victoria Cross, and be a veritable Bayard. Yet he may hate to be gazed at as he makes an after-dinner speech, and may refuse all invitations to afternoon teas. He has not the protection of being self-satisfied, self-approving, and conceited. A really conceited man is never shy,

and it has been said that he never blushes. It is certain, I think, that he cannot be very shy, and that he cannot blush often. It seems clear that the sense of shame at having done or said what is unbecoming cannot be easily roused in minds such as the conceited and self-satisfied possess. They feel that they are above the risk of committing improprieties. But the mind of the shy, diffident, bashful, modest man is quite ready to feel shame at the hundreds of things—never of grave import—which give birth to blushes. He may be correctly called self-conscious, because that word has so many meanings that some one of them may fit his condition, but it still leaves him with humility and modesty and without self-satisfaction and conceit, and there is nothing to hinder him from feeling that he may have committed some such thing as a breach of etiquette, or to stop the consequent blush of shame.

(7) There can be no doubt that persons blush when quite alone, but there is as little doubt as to this being a rare occurrence. The recollection, years after, of something awkward that took place may cause the cheeks to redden, but this does not happen frequently. The blush rises much more readily at what is actually occurring in the presence of others. What they are supposed to see, or say, or think is the usual and immediate exciter of the blush.

One may in retirement regret a fault he has committed and may know that detection is coming, yet not experience the slightest tendency to blush. It is not the sense of blameworthiness that causes the blush. But if blame is brought home to him

unexpectedly by a stranger, especially in the presence of other strangers, he is 'covered with confusion,' that is, he blushes. I have the young specially in my mind when I say this, and I remember how they exaggerate the small, trifling matters which cause them to blush, and how they speak of *Guilt* in regard to what does not really rise above a *gaucherie*, a breach of etiquette, a mild impropriety, or a stupid remark. In the sense of shame that raises a blush, conscience plays little or no part. It is not the feeling of guilt, but the thought that others think us guilty. We may even know ourselves to be altogether innocent, and yet blush at the thought that those present believe they have detected us in some fault, and regard us as deserving of blame.

It is not necessary that the bystanders shall be seen. It is only necessary that they be known or thought to be present. For it is safe to assert that persons blush in the dark, in spite of what poets and others have written. Campbell quotes Perty as saying that blushing never occurs when one is alone or in the dark. He also quotes Hagen as being of the same opinion. My own inquiries lead clearly to the belief that blushing both in solitude and in the dark can take place. It is certain that *the blind from birth* are often great blushers in their young days, and they are always in the dark. Of this I have satisfied myself conclusively. But they also, like those who see, blush most readily when they know that they are in the presence of others.

In the case both of the blind when in solitude, and of the seeing who are in solitude and in the dark, there may occur a sense of shame at what concerns

others, and concerns themselves in no way, and this sense of shame may bring up a blush, but this is not a common occurrence.

All this relates to the trivial things that habitually cause the blush of shame. Things of grave import never cause it. A man may be full of remorse for a great crime he has committed, he may be oppressed with a sense of guilt, and he may realise that God knows of it and condemns him, but this does not cause him to blush. There is a failure to understand the nature and causes of blushing, unless it be clearly understood that it relates only to, and expresses only, a sense of shame caused by things which are really of small moment, and which, being recognised as of that character by grown-up people, have no tendency to excite blushing in them. The young magnify their importance, and by the old they are sometimes perhaps belittled. Hence grown-up people rarely blush—rarely as compared with the young. They are protected, according to this view, by their riper judgment.

(8) Campbell quotes Hagen as saying that in the decline of a blush the ‘natural colour returns to the face, or it becomes pallid,’ and this correctly describes what happens, so far as my observations go. I take it to mean that usually—in the great majority of cases as I think—the face at once resumes its natural colour after a blush, but that in certain instances—very rare, as I think—pallor follows the disappearance of the blush. It appears to me that this is also in substantial agreement with the opinions of Burgess. Vanishing into pallor is not

the normal progress, but its occurrence is possible. No observer will see it often, and many will never see it.

The occurrence of a consequent pallor is much more frequently noted by lay than by medical writers, and it seems to me that some of these laymen are not tightly bound by a love of accuracy, which bores them, and that under the sway of sentimental considerations they see what they think pretty, namely, the crimson not merely melting away, but running into the pallid. They persuade themselves that they see this often, which I treat as an error, though I think it may sometimes occur.

(9) Generally only the face, ears, and neck redden, but it is nevertheless correct to say that the whole body may be affected, and there may be tingling, or some peculiar sensation, almost everywhere. The redness may begin on the forehead, but it usually begins on the cheeks, from which it spreads to the ears and neck, in no regular or uniform manner. It rarely goes so low down as the collar-bones or shoulder-blades, but there are well-attested cases on record in which it has gone down much lower—over the chest and abdomen, and even over the upper part of the legs.

In persons who belong to races that habitually go almost naked the blush is said to be more extended, and to go *often* down to the arms, chest, and waist. But it is not a well-established fact that this is a distinct characteristic of people whose bodies are nearly as much exposed as are the faces and necks of more fully clothed people. In other words, it is

not certain that in such people blushing has habitually this greater extent.

Against the view that the parts of the body more or less constantly exposed are those most liable to become red, from any state of mind, is the fact that the hands, which are almost constantly exposed, never redden from such a cause. It is not alleged in the case of any race, however scantily it may be clothed, that the blush is not *often* entirely confined to the face, neck, and ears. All that has been alleged is, that among the scantily clothed blushing is more liable to spread over the chest or back than among those whose dress covers them more completely. It seems to me almost certain that this merely means that in the scantily clothed we have opportunities of seeing this more frequently than in the fully clothed.

Among the fully clothed races the face is much considered—it is probably the most important item of what goes to make up beauty, for which indeed ‘good looks’ is almost a synonym. The face, however, does not receive this consideration because it happens to be a constantly exposed part of the body, but because it is the part through which the mind and character can best be disclosed and read. And there is no evidence that races, who expose habitually other parts of the body, give anything like a comparable consideration to the other parts so exposed.

There is no good reason in short for supposing that the face is the usual seat of blushing because it is habitually exposed; nor does this exposure explain why there is in the face a peculiar arrangement of the capillaries, which facilitates its being suffused

with blood, under a sense of shame or for other causes of a quite different character. Such a peculiarity is believed to exist, but the discussion of the subject does not fall within the scope of this paper.

(10) Dr. Harry Campbell in his work on *Flushing and Morbid Blushing* says that there is no sharp dividing line between flushing and blushing, but he proceeds at once to show that there is a dividing line, which, as I see the matter, is quite definite and sharp. He points out that a blush is excited by a mental emotion, whereas the flush is independent of any emotional state.

Both the flush and the blush show a reddened face, and in this respect as well as in others there are puzzling resemblances. But they differ radically in their causes, and they differ nearly as radically in the states of mind which they induce. Blushing is both caused by a state of mind and it causes a state of mind. Flushing on the other hand, though it is not caused by a mental state, induces a mental state, just as blushing does, though of a different character.

Dr. Campbell's *morbid* blushing is more than *inordinate* blushing. There is no doubt as to the existence of such an excessive amount of blushing in some individuals as to be exceedingly troublesome and distressing. But in blushing itself there is no disease and nothing morbid. It is physiological and not pathological. It is the normal expression of a mental state, and it comes and goes without injury to the blusher, even though it may be properly held to involve short passing fits of mental disorder.

The most characteristic of the flushings with which Dr. Campbell deals are those which are so strongly marked in women at the climacteric period, but such flushes do not seem to me to be capable of being mistaken for blushes. The face, indeed, reddens for a great many reasons. Many strong mental disturbances cause it to redden. So does excessive exercise. And so do many states of disease. But the flush of rage is the most interesting, as it has a special mental state for its origin, and as this mental state differs so greatly from that which calls up the blush.

(11) From the red flush of anger, or the hectic flush of disease, blushing is easily and certainly distinguished. It is in the expression of the countenance that the difference mainly lies. 'In anger,' Bacon says, 'the eyes wax red; and in blushing, not the eyes, but the ears, and the parts behind them.' He curiously limits the blush to the ears, but he rightly insists on there being a distinct difference between it and the flush of rage. The flush of rage is not confined to man. It probably occurs in many animals, though it is only visible in a few. It is quite visible, for instance, in the turkey and the game cock. In these animals it constitutes the expression of a mental state, similar to that of which it is the expression in man. It is impossible, however, even to guess why the caruncle of a turkey-cock should become red when the bird is in a state of anger.

(12) It has been said that in an intense blush we

have symptoms which characterise inflammation—redness, heat, swelling, and pain—and this can scarcely be doubted. If the blush could be kept up, structural changes would almost certainly begin to appear. It is the short life of the blush, its evanescence, that accounts for the preservation of the health of the part. The expression of the features of the face, which attends blushing, has nothing, however, to do with the consideration of blushing as the beginning of an inflammatory process, but it should be remembered that whenever the suffusion of the face subsides the features resume their usual expression. It is more true, even than it is of blushing, that the various forms of facial flushing can be properly regarded as the beginnings of inflammation, and that, if they persisted they would lead to what is usual in inflammation. Both in blushing and in flushing, before the fading commences, the redness often becomes a scarlet red, and this, perhaps, is due to a direct oxygenation of the blood close to the surface. Whether the redness of the cheeks is due entirely to a greater flow of blood in the dilated capillaries, or is due in part to some stagnation of blood, it is difficult to say. The quantity of blood in the cheeks is at all times large, and it is easily increased—by violent exercise, for instance, or in fevers, or under states of mind differing from that state which causes the blush—rage, for example. These suffusions take place in the cutis or true skin, which is almost white in all races.

(13) Burgess points out that we cannot cause a blush by any physical means, as we can cause laughter by tickling. In blushing the mind must

always be affected. It is always, and only, a bodily expression of a mental state. And it is involuntary. 'No individual blushes of his own free will.' It never appears under an order of the will. It comes without call instantaneously, and vanishes almost as quickly. Neither for its coming nor for its going is there any exercise of volition.

This phenomenon is correctly enough called involuntary, though that quality can scarcely be ascribed to any vital process, in regard to which it may not be shown that the will in certain circumstances seems to exercise some influence. Indeed this is true even of ordinary reflexes, though generally it is by straining and loose phrasing that voluntariness in them is shown or attempted to be shown. If *will* does influence blushing it is rather by increasing than by preventing it, in the sense that a wish to avoid or restrain blushing seems to induce and prolong it. This is said to happen, and perhaps it does happen, but there is no proof. It is a natural thing for a blusher to say that he had tried not to blush, but that the more he tried the more he blushed. But the continuance or repetition of the blushing may really have been as involuntary as its starting.

When it is said that the dread of blushing acts as a restraint and prevents it, it is impossible either to assent or dissent. There is no way of knowing for a certainty where the truth lies. I have never been able to find evidence that the fear of blushing has ever directly prevented the blush from arising, but it is quite easy to get abundant evidence of the opposite—namely, that the fear of blushing, even when very strong, has altogether failed to prevent its appearing,

and it will often seem that the fear has deepened the blush rather than prevented it.

(14) It seems desirable to ask whether blushing can be regarded as a mere reflex.

A reflex, according to Darwin, is 'the excitement of a peripheral nerve, which transmits its influence to certain nerve cells, and these in their turn excite certain muscles or glands into action,' and he says that, though this may be accompanied by sensation or consciousness, it may also take place without any sensation or consciousness. This looks simple and satisfying, yet in reality it will scarcely be found to meet and cover all alleged reflexes, especially those in which complex, obscure, and widespread muscular movements arise.

The will plays no part in such excitement of muscles into action, as it is now manifested to our observation, yet originally, a very far way back, some believe that the excitement into action may have been under the direction of the will and that the movements may then have been habitually thus performed, becoming eventually involuntary, and appearing as inherited instincts. This is an ingenious speculation, and it may, perhaps, be a true history of some reflexes, but it can scarcely be the history of others, which have almost certainly appeared through all time as they appear now—beyond control of the will. The contraction of the iris under the stimulus of light on the retina has never in any animal been known to be voluntary, and it is difficult to see how it can be regarded as a habit that has become an instinct.

In blushing there occurs no acting on peripheral nerves to call it into existence. If, however, we regard the mental state of which it is the expression, as transmitting something from its seat in the cerebrum to the parts of the nervous centres in charge of the circulation in the capillaries of the face and neck, which thereupon transmit their influence to the blood vessels of the face, then perhaps we get what may be considered as somewhat analogous to an ordinary reflex from the excitement of a peripheral nerve. This may possibly be a speculation which travels towards truth, but it yields no explanation of why an excited centre of the sense of shame should send a message to the centres controlling the capillaries of a special part of the body.

If such a message is sent by this emotion or mental state, then I think we may speculate further, and ask whether every comparable mental state, or indeed whether every occurring mental state of any kind, does not send a message to some nerve centres which in their turn call into existence physical or bodily phenomena—these being the bodily expression of the mental state in question. In the case of blushing, the induced change is visible, but of course it is easily conceivable that changes may be induced, which are neither seen nor felt. The whole play of the mind—all mental operations—may thus be expressed on some part or other of the body, either internally or externally; and we know enough to make it certain that there need be no relation, which we can understand, between the part of the body affected and the character of the mental state—no closer relation, for example, than there is between redness of the face

and a sense of shame. Such expressions, if they exist, may be manifested in any part or organ of the body.

This, if true, seems almost to justify an opinion that in a certain sense we think with the whole body, or at least that the whole body is engaged in our thinking. It is, perhaps, only another way of holding such an opinion to say that all the nervous centres co-operate in our thinking—are all then at work—sending or receiving messages—from a periphery to a centre or the reverse, or from a part of one centre to a part of another—in all possible ways in short—no centre ever acting quite alone—with no mental operation that is not expressed in a bodily change.

Such universal bodily manifestations of mental action, if they exist, are of course physiological. There is no disease in them. It is not perhaps correct to say that their effect on health is good, because they belong to health. They may appear to be extravagantly purposeless, but they may nevertheless serve some good purpose, and this would no doubt be as true of those of them, which are neither seen nor felt, as of those which are either seen or felt.

When a particular state of mind, which ought only to be occasional and of short duration, is by our will or otherwise made to be of frequent occurrence and long duration, then disease may show itself; and the beginnings of that disease may be in the part of the body in which that mental state is too frequently and too continuously expressed, as in a gland for example, or the beginnings of the disease may be in the seat of the special mental state itself. It seems possible that these inter-relations of mind and body

may tend to the preservation of health, through the controlling influence which they may exercise in the prevention of excesses. It is not easy to say precisely how this would come about, but it may be held that it always happens that for the continuance or repetition of complex productions all parts contributing must be responsive—if one part fails production would cease, and this may in practice prove a check on excess.

So long as speculations of this nature have their character fully acknowledged, and so long as they are not quite *idle*, they may have a useful outcome. They at least direct attention to what merits consideration, and may lead to a fuller knowledge, even to such a fulness of knowledge as may render them no longer mere speculations. That many mental states have striking bodily expressions, and that many bodily states are attended with special mental states, are *facts*, and the speculation here is that both of these things may be more extensively true than is known or acknowledged. The speculation, indeed, goes further, and asks if every mental state without exception may not have a special bodily expression, and if every bodily state may not have its attendant mental state, though we are not conscious of them and though they are not evident to our senses. The point thus raised has at least sufficient support to make it not unworthy of consideration, and, if true, it cannot fail to have a far-reaching influence on the management both of health and disease.

If all mental states have bodily expressions and all bodily states have mental expressions, it seems

desirable to point out that there are grounds for thinking that these will be most pronounced in early, though not in quite early, life. There must be mind before its states can have bodily expressions, and therefore the beginnings of such bodily expressions of mental states must be comparatively feeble in very early life. At what time of life they would reach their maximum of force, how long that would be maintained, and when the decline would commence, it is difficult to say. Those expressions, which are visible, do not seem to follow an identical course in this respect. So far, however, as anything is learned by a study of visible bodily expressions of mental states, the maximum appears to occur about the time when the reproductive powers are established. For example, this is seemingly true of blushing and laughing. As yet we have no facts or observations to indicate when the decline begins. But in the two expressions of mental states, which I have just mentioned, namely blushing and laughing, the decline would be well marked at the age of forty-five, when Presbyopia and other such things may be expected to show themselves. Most men and women, indeed, have ceased to blush at that age, and many of them have begun to laugh less heartily. The decline, as age advances, seems to be well marked, and it is difficult to say why it should be so, for if it is good for girls and boys to blush and laugh, it ought also to be good for grown men and women, and even for old men and women, to do these things.

(15) The blush cannot be excited by physical means. Burgess says that ‘it must be solely a moral

(mental) stimulus that will excite a true blush,' and that 'its presence is the result of a painful struggle in the mental feelings.' There is truth in this, and a truth of importance. But the 'painful struggle' is perhaps more correctly defined as uneasiness and flurry. By no physical means can we cause a girl to blush, nor can we teach her how to feign a blush. There may be a feigned merriment and a false laughter, but there is no unreal blush. Much has been attained on the stage, but not the blush. Seneca saw this and says that the Roman players were 'unable to blush in acting shame.' Even pallor *at will* seems possible, but not colouring-up. The true blush is involuntary, and comes against the will. It comes and goes absolutely without invitation. It does the first almost instantaneously, and the second often with nearly as much quickness. It is the instant echo of a thought, and from this point of view is full of suggestiveness. There is no measurable pause between the sense of shame and the flare of red on the cheeks. No one blushes of his own free will, and it is doubtful if the will could operate with such rapidity as is done by this instinct. It is probably necessary for the maintenance of steady health that certain things should be freed from the action of will, but it is difficult to see the importance of this freedom as regards blushing.

(16) Darwin says that Humboldt (*Personal Narrative*, English trans., vol. iii. p. 229) quotes without protest the sneer of the Spaniard: 'How can those be trusted, who know not how to blush?' If this refers to old persons of any race, it is without sense,

for they often cease to blush. If, again, it refers to any whole race, it is equally without sense, for we do not know of any race in which blushing does not appear.¹

(17) Albinoism may perhaps be spoken of as a *lusus naturæ*, if there is such a thing. It may appear in any race of men and in any country. It may also occur in the lower animals. It is the same condition in whatever race or country, or in whatever animal it occurs. The albino of a white race blushes freely. Burgess says of one albino: 'Her face became suffused with blood, whenever her companions teased or ridiculed her.' But the point of most interest is that the African albino, or white negro, also blushes freely and strongly. Burgess had an opportunity of examining two cases, and he says that he 'never witnessed a more interesting example of the manner in which the blush rises and overspreads the cheek than these individuals presented.' In the course of twenty minutes they blushed many times. 'The slightest attempt to examine their peculiarities excited this phenomenon.' Tylor also says that negro albinos blush freely.

This makes it probable that the opinion that the black African blushes is correct, and that in his race the blush is expressed, not by redness of the cheeks, but by a deepening of the black. Indeed,

¹ There are only two references to blushing in the Bible, and both of these refer to the blush of shame:—'I am ashamed, and blush to lift up my face to Thee, my God' (Ezra ix. 6); and again, 'Were they ashamed when they had committed abomination? nay, they were not at all ashamed, neither could they blush' (Jeremiah vi. 15). It is proper to say that Robertson Smith was of opinion that in the first of these passages, and, I suppose, in the second also, the word in the original, which is rendered *blush* in the translation, does not really imply blushing.

the red colour of the blood spreading beneath the dark pigment might be expected, as Burgess points out, to give to the black a deeper tint. If this is true, there can be no hesitation in accepting it as a true and real blush.

Hybrids, mulattos, or crosses between blacks and whites, are well known to blush as freely and fully as pure whites. And there is no question as to the blush appearing in brown and yellow races. It is certainly not a phenomenon belonging exclusively to the white races. It belongs to all mankind, and to man only of all animals. It seems to follow that the mental state, which excites it, is experienced by man in every condition in which he has been found.

The blush is very striking in the white races, but there is no evidence that in such races it increases either in frequency or strength according to the degree of culture. It is often troublesome and is never desired, but it is nowhere thought unbecoming or a sign of *badness*. Indeed, it adds to the price given for a Circassian beauty that she is seen to blush. It comes without the will and in spite of it, stays for a moment, then vanishes, perhaps to return again, and again to vanish. It is not a thing which can be painted on a woman's face, for it is not simply a red flush. It is more. There is a subtle change in the physiognomy, which is needed to transform the flush into the blush.

It is said that Sir Thomas Lawrence told Fanny Kemble that he nearly drove himself mad in attempting to paint a blush, which he calls 'the most extraordinary incident in a woman's face.' The result of his efforts was merely a red complexion—at most a

flush, with no chance of its being taken by any one for a blush.

(18) Before the blush of shame, of either variety, can appear the blusher must possess some reason and understanding. This is needed to call up the state of mind, which in its turn calls up the blush. Hence the deeply idiotic are said never to blush. Such is the general, and, in my opinion, well founded belief. For the same reason it is said that infants do not blush. This seems also to be true. But blushing begins at an early age. It seems beyond question that it may occur at the age of four. We cannot, however, explain in this way why the habit of blushing wears away in advancing years and may disappear altogether in old age, nor can we explain in this way why women blush more frequently than men. Reason and understanding increase with age, at least up to a certain point, and they are not weaker in men than they are in women. What seems to happen is this. Reason and understanding after youth is over are strong enough to show that there is really no cause for feeling a sense of shame at the usually trivial things which bring up that feeling in the young, whether these things relate to faults or to embarrassing or unbecoming situations. All the things which raise the blush of shame so freely in the young are really trivial in their nature. They are never of grave or serious import. No blush accordingly attends them, when grown-up persons have come to see their triviality. They do not feel the shame that raises the blush. Hence in advanced life blushing is rare.

The greater blushing of women is probably explained by their continuing longer in the conditions of youth, and so failing for a longer time to realise the unsubstantial and trifling character of what ordinarily raises the blush. I seem to refer here to a slower growth in women of reason and understanding as the explanation of the longer continuance of blushing in them, but I should also take into account woman's greater constitutional sensitiveness. Woman may be, and perhaps is, superior to man in some directions, but she is not identical, either in mind, or body, or development. There are differences, and there is nothing to cause surprise in finding that blushing lasts longer in her than in man, as the outcome probably of more causes than one. To her also, however, there comes eventually a time when blushing practically ceases. In both sexes, after youth is over, reason shows that the transgressions of the moral sense, which, under detection, reddened the cheeks while youth lasted, were either imaginary or of little importance, and that the sense of shame at being thought to have committed gaucheries, or breaches of etiquette, or acts of indelicacy was in reality childish and silly, and these things then cease to excite both the sense of shame and its expression.

(19) It is beyond question that deaf-mutes blush in all respects as ordinary hearing persons do, and this is what we might expect, for, though they do not hear what is said by onlookers or bystanders, they see them and they easily perceive anything in their minds, which would provoke blushing in those who hear as well as see.

It is as much beyond question that blushing appears among those born blind. I have made careful inquiry on this subject, and find that young persons of both sexes, who are congenitally blind, are often great blushers. They do not see the onlookers, but they hear what is said. They are often apprehensive that more persons are present and looking at them than are really present, and this itself is apt to raise the mental state out of which a blush arises. They themselves, indeed, give this explanation, and say that they would not have blushed, if they had known that only so-and-so were present.

The case of those who are born both deaf and blind is more interesting, and the information about them is more scanty. Darwin quotes Lieber (*Smithsonian Contributions*, vol. ii. p. 6, 1851) as saying that Laura Bridgman blushed, but much fuller information regarding her blushing is given by Dr. Howe in his Annual Reports, to which reference has elsewhere been made, and by Mrs. Lamson in her *Life of Laura Bridgman*. We are told that she disclosed a sense of shame, when a rent in her dress or dirt on her person was pointed out, and that she was herself aware that blood came into her face, when she was found out doing wrong. She could never speak of having kissed a fellow pupil, who was a boy, without blushing very much. Yet she showed a purity, modesty, and propriety so difficult to explain, as to make Dr. Howe regard it as innate, because in his opinion she had not 'as yet any idea of sex.' When she had attempted to conceal having broken a glass, and her fault was found out, 'the blood rushed to her face.' She once

asked her governess, with much blushing: 'Do you think I shall ever be married with a gentleman whom I love best and most?' The question was suggested by the approaching marriage of her teacher, Dr. Howe, about which she naturally had learned much from her fellow pupils and governesses. She was then about fourteen or fifteen years old.

It is thus quite certain that this blind and deaf girl blushed, and also that she did so from the same causes as make those girls blush who both see and hear. She had only the sense of touch to make her aware that others were present, for in her case smell, as well as sight and hearing, was defective, and she could not know what they were saying about her or that they were looking at her either intently or with curiosity, or with approbation or disapprobation. But in her mind she reached conclusions as to these matters, and she blushed, there being no real peculiarity in the cause of her blushing. The phenomena occurred in her as in other girls as the manifestation of an instinct often and not incorrectly called an inheritance.

Laura Bridgman died in 1889, but there is another American lady, Miss Helen Keller, to whom I have already referred, who is still alive and still young, and whose education has been carried far beyond that of Laura Bridgman. Regarding her also I have trustworthy information. Miss Sullivan, her distinguished governess, writes me that Miss Keller 'blushes much as other people do,' that 'she blushes at the thought of having made a mistake in answering a question, or under criticism, or when her feelings are hurt.' Miss Sullivan also says: 'She does not, I believe, blush increasingly as she grows

older' ; ' She is conscious of blushing, and sometimes rubs her face impatiently ' ; ' Her blushes spread over her neck and shoulders ' ; ' She said when I asked her, in reference to your letter, that she feels a blush tingling all over her.'

Mr. Hitz, the well-known secretary of the Volta Bureau, Washington City, writes me, that he received my letter asking information about Miss Keller's blushing while visiting her mother, who stated to him that 'she had never observed any difference whatever in Helen's blushing from that of her younger daughter and other normally endowed girls of like sensitive feeling.' Mrs. Keller also said to Mr. Hitz that Helen 'would certainly noticeably blush at the thought of having inadvertently committed a gaucherie, or that she had been detected in doing wrong.' Mrs. Keller could not tell 'at what age Miss Helen first blushed, but it was as early in life as most girls.' She thinks that 'as to her blushing increasing as she grows older, there is no evidence of it.' She says that Helen 'is aware when she blushes,' and that 'as regards the extent of her blushing, it is the same as that of any other young woman of innate refinement.' When being photographed she blushed at the idea that she was exposing her person too much to those present, but ceased to do so on being told by her governess who were present, and on being assured that all was right.

This is a most instructive and satisfying account of blushing, as it occurs in the case of Miss Keller.

In all broad aspects, the blushing of Miss Keller is exactly the same as that of well educated and refined girls. She never saw other girls blush ; she does not

know by hearing or sight whether strangers or acquaintances are present; she does, however, in point of fact, know much more of whether persons are present and who they are, than can be easily explained; her blushing can have no relation to looks or words of disapproval, connected either with her appearance or conduct; yet she blushes just as girls do who see and hear, from the same causes, over the same parts of the body, and with the same experience of tingling. Blushing came to her as it came to them by inheritance, and it is in no sense or degree an operation of the will. It is a bodily manifestation of a mental state, and of that only, and it can neither be called up nor kept back by the will. What purpose such an expression of a mental emotion serves, we do not know. But this is only one of many such phenomena about which we know little or nothing. Whytt says—‘as little can we tell why shame should raise a heat and redness in the face, as why fear is attended with a paleness.’

(20) Works on Pharmacology do not yield much information as to the flushing which attends the inhalation of nitrite of amyl. It is usually confined to the face, but it is said that sometimes nearly the whole trunk is affected. Speaking broadly, the locality and the extent of the nitrite flush correspond with those of blushing, though there is reason to think that the capillaries are somewhat more widely affected in the nitrite flush.

The inhalation of the nitrite quickens both the pulse and respiration; it has no narcotic effect; the sight is sometimes curiously influenced; it causes

a feeling of fulness and throbbing in the head; and there is *mental confusion and dizziness*. I gather this from works on Pharmacology. I do not find that the occurrence of the mental confusion has received much attention, but it is accepted as a fact. The character and extent of the mental confusion do not appear to have been studied. Darwin calls it confusion and bewilderment, and tells of a woman who spoke of her condition as *muddled*. If we assume its existence, we then have the mental accompaniment of blushing presenting itself, when a bodily state occurs that resembles blushing, which is induced by the inhalation of a drug and not by a special state of the mind.

Darwin quotes Filehne as believing in a complete analogy between the action of nitrite of amyl and the mechanism of the natural blush (*Kosmos*, Jahrg. iii. 1879-80, p. 480), and also as thinking it not too rash to assume that the amyl-nitrite and the psychological cause of blushing attack the same point in the nervous system and produce the same effects (Pflüger's *Archiv*. Bd. ix. 1874, p. 491). This last, however, is not more than a guess at a possibility.

There can be no doubt as to the existence of a curious resemblance of the nitrite of amyl flush and the blush of shame, not only in the area affected and other physical characteristics, but also in the mental confusion and bewilderment which are produced. The blush is caused by one mental state and it then causes another. If we cause the flush by the administration of this drug, we appear to cause the same mental state which blushing produces. In other words, a special mental state gives rise to a special bodily state, which in its turn gives rise to another

mental state, and if we cause that special bodily state by the nitrite, it appears to induce the same mental state as blushing does, in so far as mental confusion is concerned.

I consulted Sir Thomas R. Fraser and Sir T. Lauder Brunton in regard to the nitrite of amyl flush or blush, but they could not refer me to any writer who had made a special study of the mental state consequent on its inhalation, and I have not had opportunities myself of examining the matter.

(21) The fixed rosiness of the young girl's cheeks is not a flush nor is it a blush. It is steadily there, and it expresses no mental emotion. It shows that the small vessels of the face are in a state which admits of its being supplied abundantly with blood. It occurs in a skin area, which lies over a multitude of small muscles, called very frequently into action for a great variety of purposes. The constantly repeated commotion of the muscles of the face can scarcely fail to be attended with changes of the circulation in the skin that closely covers them, which thus perhaps acquires a readiness to allow the appearance of the flush, or the blush, or pallor. The face is a mirror in which to a large extent the mind and character are reflected or disclosed, and it is almost never at rest. And perhaps the rosiness of young health is only a revelation of happiness and comfort under a sense of physical well-being, and of hopes and feelings which then seem sure of fruition. I feel, however, that this is but a limping explanation of the common fixed rosiness of a girl's cheek, and the less common fixed rosiness of a boy's cheek.

(22) In the study of a subject like blushing, all sorts of exceptional cases come under notice and seem to upset general conclusions. Every person supposes himself to know all about such subjects, but it will generally be found that only what is out-of-the-way has arrested attention. This, however, is made to bulk largely, even with those who, on reflection, are quite aware that such exceptional cases can seldom be supported by evidence which is in any sense sufficient. My notes abound with these exceptional cases, communicated to me by friends, but I have set nearly all of them aside as unworthy of consideration. Many of them have clearly no foundation at all, and to discuss these would be to discuss unrealities. Others are set aside because they are not things capable either of *proof* or *disproof*, and we are left to be guided by *probability*, which leaves them engulfed in general conclusions without any disturbance of those conclusions.

Even such a thing as that *very old women* have been known to blush freely, I have not discussed. It may be a fact, but I have not found a single case which I was able to regard as well attested. I venture to give this example, in order to say that the age of the *very old women*, whose cases have been reported to me, was often fifty or thereabout, and that the so-called frequent blushing in many of them was quite certainly not blushing at all, but the flushing that so often appears during the climacteric period.

(23) This short study of blushing seems to lead to the following conclusions :—

1. That blushing is always the expression of a

special mental state ; that it causes another mental state which is a state of mental disorder ; that both the blush and this mental disorder come and go almost instantaneously ; and that the frequent appearance and disappearance of this disordered mental action does no harm to the health of the mind or body.

2. That blushing is involuntary, cannot be called up by the will, and cannot be feigned.

3. That blushing is the exclusive property of man and occurs in all races of men.

4. That blushing most abounds in the young and practically ceases in advanced age.

5. That bodily expressions of mental states may be much more numerous than we suppose.

6. That persons deprived from birth of sight or hearing, or of both, blush just as ordinary persons do.

7. That the inhalation of nitrite of amyl causes the face to flush, and that this seems to be attended with the same confusion of mind as that which attends the blush of shame.

8. That the flush of anger, the flush induced by violent exercise, the hectic flush of fever, the flush of women at the menopause, the fixed rosiness of youth, and other such things, are altogether different from the blush of shame.

POSTSCRIPT

THESE short essays were in type and ready for press before the publication of *Laura Bridgman* by Dr. Howe's two daughters, and in writing them I had no opportunity of consulting that very interesting and useful work. The delay, which has taken place in printing off, has been due to private causes. If I had been earlier in possession of this fresh and delightful *Life* of Laura, I should no doubt have quoted from it, but I should not have had to alter any opinion I have expressed.

A. M.

Juny. 1905.

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